Feasibility Report - Final Environmental Impact Statement/Report
Water Resources Investigation

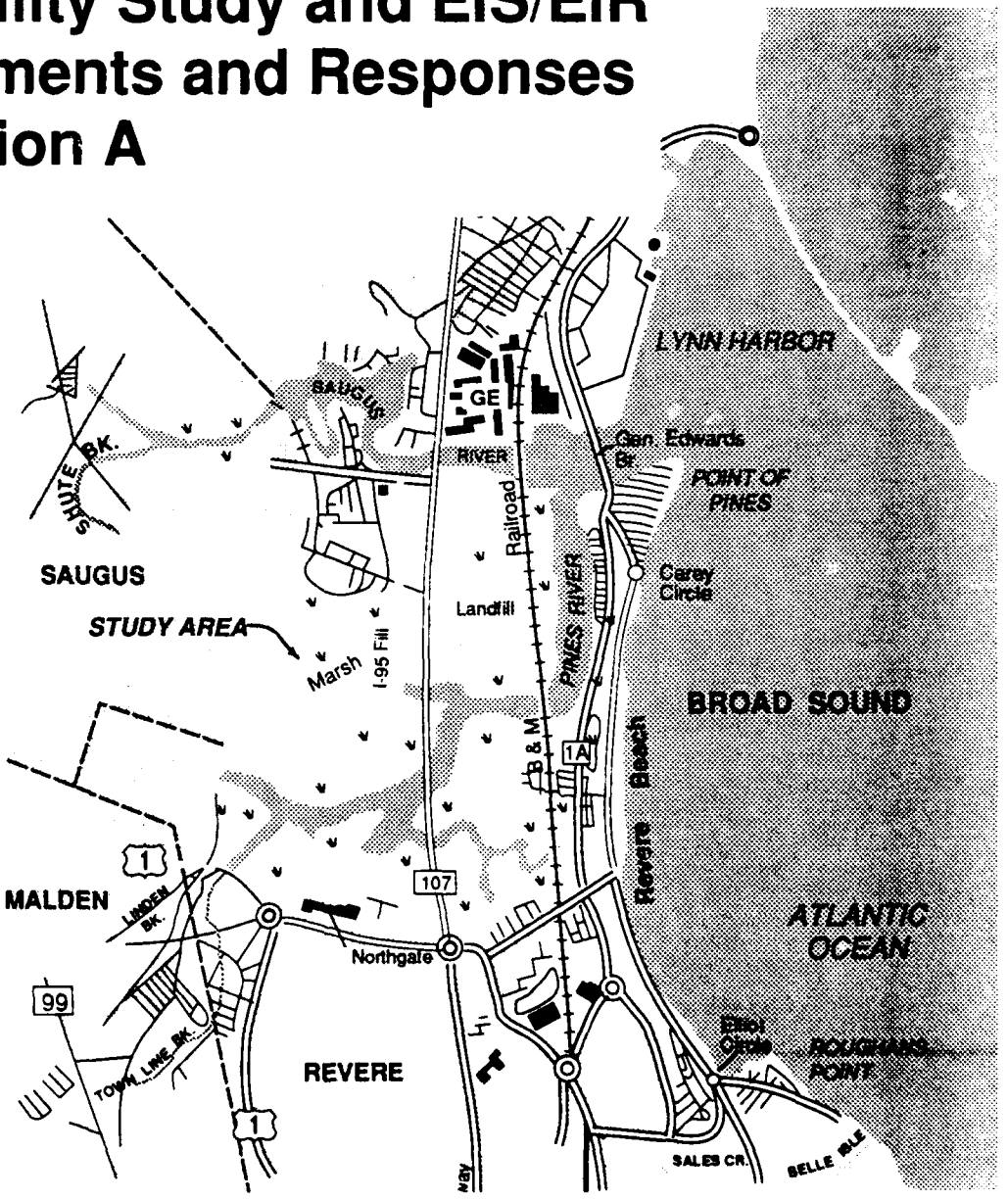
Saugus River and Tributaries, Lynn, Malden, Revere and Saugus, Massachusetts

Flood Damage Reduction

Volume 7

Appendix

J - Feasibility Study and EIS/EIR Comments and Responses Section A



December 1989

US Army Corps of Engineers
New England Division

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This report discusses the Corps of Engineers' responses to the Public Review of the Draft Feasibility Report, Environmental Impact Statement and Environmental Impact Report (EIS/EIR) various project revisions; this appendix includes all project changes; no other appendices were revised.

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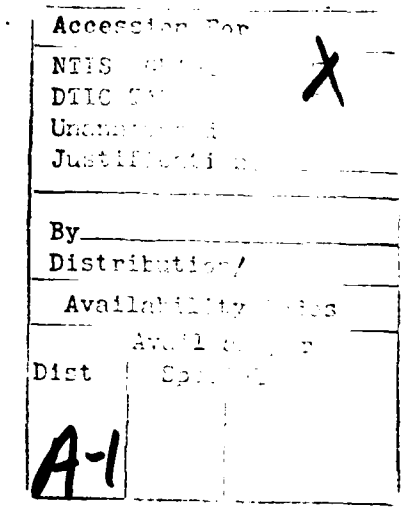
SAUGUS RIVER AND TRIBUTARIES
FLOOD DAMAGE REDUCTION STUDY

LYNN, MALDEN, REVERE
AND SAUGUS, MASSACHUSETTS

FEASIBILITY STUDY AND EIS/EIR COMMENTS AND RESPONSES

Volume 7
Appendix J - Section A



Department of the Army
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

December 1989

SAUGUS RIVER AND TRIBUTARIES FLOOD DAMAGE REDUCTION STUDY

Lynn, Malden, Revere and Saugus, Massachusetts/Summary of Study Reports:

Main Report and Environmental Impact Statement/Report (EIS/EIR): Summarizes the coastal flooding problems in the study area and alternative solutions; describes the selected plan and implementation responsibilities of the selected plan; and identifies environmental resources in the study area and potential impacts of alternative solutions, as required by the Federal (NEPA) and state (MEPA) environmental processes.

Plan Formulation (Appendix A): Provides detailed information on the coastal flooding problem and the alternatives investigated; includes: sensitivity analyses on floodgate selection (including location and size of gates and sea level rise); optimization of plans; comparison of alternative measures to reduce impacts; and public concerns.

Hydrology and Hydraulics (Appendix B): Includes descriptions of: the tidal hydrology and hydrology of interior runoff in the study area, and of wave runup and seawall overtopping, interior flood stage frequencies, tide levels, flushing, currents, and sea level rise effects without and with the selected project for various gated openings.

Water Quality (Appendix C): Includes descriptions of existing water quality conditions in the estuary and explores potential changes associated with the selected plan.

Design and Costs (Appendix D): Includes detailed descriptions, plans and profiles and design considerations of the selected plan; coastal analysis of the shorefront; detailed project costs; scope and costs of engineering and design; scope and costs of operation and maintenance; and design and construction schedules.

Geotechnical (Appendix E): Describes geotechnical and foundation conditions in the study area and the design of earth embankment structures in the selected plan.

Real Estate (Appendix F): Describes lands and damages, temporary and permanent easements and costs of the selected plan, including the five floodgate alignments studied.

Economics (Appendix G): Describes recurring and average annual damages and benefits in study area floodzones; economic analysis and optimization of alternative plans.

Socioeconomic (Appendix H): Describes the socioeconomic conditions in the study area and the affects of the selected plan on development in the floodplain and estuary.

Planning Correspondence (Appendix I): Includes all letters between community officials, agencies, organizations and the public and the Corps prior to agency and public review of the draft report.

Feasibility Study and EIS/EIR Comments and Responses (Appendix J): Includes all project revisions, and comments and Corps responses to letters received during agency and public review.

Environmental (Appendix K): Includes basic data from investigations of environmental resources in the study area and presents the Mitigation Incremental Analysis.

SAUGUS RIVER AND TRIBUTARIES
FLOOD DAMAGE REDUCTION STUDY

APPENDIX J - Feasibility Study and EIS/EIR Comments and Responses

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SECTION A

SECTION B ATTACHMENTS

INTRODUCTION

This appendix discusses the Corps of Engineers' responses to the Public Review of the Draft Feasibility Report, Environmental Impact Statement and Environmental Impact Report (EIS/EIR) various project revisions; General and Specific responses to the individual comments and the comment letters themselves. This appendix includes all project changes, no other appendices were revised.

Public involvement efforts have been underway throughout the study with opinions on the project and its alternatives elicited from the general public, elected officials at the State and community level and Federal and State agencies concerned with water resources development. In June 1989 that involvement was extended through distribution of 500 copies of the draft Feasibility Report and EIS/EIR.

Comment letters included later were received from 51 commentors which are listed in the Comment/Response Section. Comments included statements both for and against the recommended project, or against particular features, several of which were subsequently revised. Others favored another option or a combination of features from two options.

Each comment received has been identified and responded to in the Comment/Response section. Since a number of comments concerned similar issues four General Responses dealing with Estuary Protection, Non-Structural Techniques, Lynn Shorefront and Sea Level Rise have been developed. In addition specific responses have been prepared and keyed to the comment letters.

PROJECT REVISIONS

Several features of the project were revised primarily in response to comments received. These include:

Method for Protection of Estuary Storage Capacity
Lynn Harbor Shorefront
The Floodgate Structure
Point of Pines Structures
Mitigation Site Location

Keywords: Flood Control, Environmental Protection, Public

Estuary Storage Capacity Protection

As discussed later in General Response #1 the Corps of Engineers' Washington Level Review Center concluded that the only sure and sound way to protect the storage capacity was to acquire a real estate interest in the area necessary to ensure adequate estuary storage capacity. The reasons cited were that regulatory measures were ever changing and risky to depend on over the next 100 years. Also the laws and regulations to protect wetlands all allow variances which could result in a reduction of the storage capacity. The project and the Final Report and EIS/EIR have been revised to reflect these changes.

Lynn Harbor Shorefront

General Response #3 discusses the relocation of the Lynn Harbor dikes shoreward of the existing bulk head line. Along Lynn Harbor the draft report had selected dikes which were the most cost effective solution, at that time, and which caused the loss of 5.6 Acres of intertidal habitat. Due to the strong opposition to this impact by resource agencies and interest groups the features were evaluated in more detail and revised. Also walls proposed along the shorefront were reevaluated due to a high real estate impact and modified.

Lynn Harbor Dikes - Reaches B and C

Several factors have had an affect on the evaluation and selection of an alternative along Lynn Harbor, Reaches B and C. They include: (1) the evaluation of an alternative which reflects the possibility that an approved development plan would be forthcoming which would lower the real estate cost to the Regional Project for dikes constructed upland of the bulkhead; (2) the possibility that a new developer would take over, leaving the time frame for a developers' approved plan uncertain; (3) a higher cost of mitigating the loss of 4.6 acres of intertidal habitat; and, (4) the strong opposition by Federal and State agencies and interest groups for the loss of the intertidal flats.

During the planning process the developer of the Lynn South Harbor area was actively pursuing development plans which would have completed construction of the South Harbor area in phases over the next 10 years. He had also completed construction of one development near Heritage Park and started another at Harborside Landing both in the inner harbor. Following the draft review of the report, it was learned that the South Harbor area behind the proposed dikes in Reaches B and C, may be acquired by a new developer.

The cost of mitigating intertidal impacts also increased due to the revised location of the mitigation site. The new narrower location of the I-95 embankment resulted in a higher excavation cost per acre mitigated.

On August 22, 1989 following the draft report review, the Corps met with representatives of the Lynn South Harbor Development, Lynn Planning Office and Coastal Zone Management to review future plans along the shorefront and alternative measures for the Regional Project. The following reflects the revised analysis of each alternative summarized in Table 1, for Reaches B and C.

Alternative #1 - The draft report had selected this alternative with dikes being constructed over the sand flats ocean side of the bulkhead causing a 4.6 acre loss of intertidal habitat which would be mitigated. It is unlikely this alternative would receive state approval as a similar proposal by a developer had been denied. The total cost of this alternative is about $3,475,000, with an average annual cost of $348,000. Since the Plan would eliminate the future replacement and repair cost of shorefront structures by others, it realizes a shorefront benefit of $100,000. The incremental net average annual cost is $248,000.

Alternative #2A - This alternative relocates the dike so it is constructed upland by removing existing fill land side of the toe of the bulkhead. This alternative is preferred by resource agencies since it would not destroy any intertidal clam flats. There is a high cost of real estate for this alternative. The total cost is $6,589,000, and the incremental net cost is $559,000 shown in Table 1. See the Lynn Harbor Dike section in the Main Report.

Alternative #2B - This is the same as alternative 2A, except the assumption is made that prior to construction, the developer would have a similar plan approved by the State in advance of the Corps final design. As a result, the dike at this location (upland of the bulkhead) would reflect the highest and best use of this land and the real estate cost to the Regional Plan would be nominal. Due to the active planning for development is this area by developers, it is fully expected a plan will be approved similar to this in the near future. This alternative which has the lowest net annual cost is therefore selected. The final design proposed by a developer would be coordinated to assure it meets Corps criteria. Variations in the design are possible such as a lower and steeper dike, with the ground behind the dike raised to the required elevation 15± ft. NGVD. The alternative would cost $2,790,000, with a net annual cost of $179,000.

Alternative #3 - This alternative uses a steel sheet pile wall supported by batter piles. It would cost $8,000,000 (with no loss of flats) and have the highest net annual cost.

Alternative #4A - This alternative considered a wall located 300 feet inland of the bulkhead, located along the back property line of the undeveloped property. This alternative would not realize the shorefront benefit. The cost of this alternative is $2,304,000 with a net annual cost of $230,000. The wall alignment would run from the floodgate structure to the property line near the Bay Side Inn and continue 1,650 feet in Reach B within 15 feet of the property line to high ground opposite Hanson St. It would continue from high ground in Reach C across Riley Way and return to the shorefront at Reach D. This alternative had not previously been considered in the draft report because at that time, development of the South Harbor appeared eminent.

Alternative 4B - This is the same alignment as alternative 4A except a dike is used in lieu of a wall. A higher real estate cost for the wider dike places the total cost at $3,470,000 with a net annual cost of $347,000.

Summary Reach B and C

Due to the lower incremental net annual cost associated with Alternative #2B, it is the selected alternative provided a developer has a plan approved by the State prior to the Corps starting final design on the dikes. In the event a developer's plan is not approved, the sponsor has two options: (1) to acquire the real estate along the bulkhead for alternative #2A; however, the additional cost of about $3 to 4 million would be a total non-Federal cost, when compared to either alternatives 2B or 4A, (2) proceed to implement Alternative 4A the next alternative with

the lowest net annual cost, which would be cost shared 65% Federal and 35% non-Federal. Under this alternative, the wall could be removed in the future by a developer, once structures with a similar level of protection, approved by the Corps, are completed.

Mitigation Cost of Alternative 1

The mitigation cost was based on the cost of mitigating the Regional Plan at $212,000 for 2 acres of intertidal and 1 acre subtidal. The one acre subtital is about the minimum area needed to maintain water in the mitigation basin to prevent drying out of the intertidal area at low tide. Therefore, it was assumed that for any additional 2 acres of intertidal acreage which would be needed for mitigation, 1 acre of subtidal would also be included. The cost therefore, for additional intertidal mitigation was estimated at $212,000 per 2 acres Intertidal, or $106,000 per intertidal acre plus $20,000 per mitigated acre for the sites real estate, totalling $126,000 per intertidal acre. (The cost could be higher since the additional excavated sand for a larger mitigation site could not be used by the project.)

The sensitivity of the above assumptions to the incremental annual net cost of Alternative 1 can be tested by assuming a lower mitigation cost. If the $212,000 Regional Plan mitigation cost is divided by the total 3 acres of intertidal and subtidal acreage mitigated, then the cost per acre would be $71,000 per acre plus $20,000 for Real Estate, for a total of $91,000 per acre mitigated. For alternative 1's 4.6 acres, the mitigation cost would be $419,000. The total first cost for alternative 1 would then be ($419 K + $2940 K) $3359 K with an annual cost of $336 K, benefits of $100 K, and an incremental net annual cost of $236 K. Since this cost for alternative #1 is still higher than alternatives 2B and 4A, there would be no change in the outcome of the analysis.

Lynn Harbor - Reach E

The originally proposed dike in Reach E, located in part on tidal flats and part upland, with 1.0 acre intertidal loss has been revised to a wall with stone protection. The dike required 1 acre mitigation and about a 5 foot wide permanent easement along the road. The wall and stone would be constructed where existing rip rap or stone is located. The lower cost wall was selected.

	Cost Comparison ($1,000)	
	Dike	Wall
Construction Cost w/Contg. & EDSA:	$685K	$900
Real Estate	165K	0
Mitigation Cost	[illegible]	0
	$9[illegible]	$900

Lynn Harbor - Reach D

The steel sheet pile wall selected in Reach D was originally supported by a tie-back system which required a million dollars for permanent easements above the inland tie-back system. The design was revised to batter piles as shown in the main report. The cost was reduced about $1 million, since permanent easements would not be required. The wall does result in the loss of about 0.1 acres of subtidal habitat. At the location of the existing granite wall, the new steel sheet pile wall would be offset about five feet seaward resulting in the impact.

TABLE 1
INCREMENTAL ECONOMIC ANALYSIS
ALTERNATIVE SHOREFRONT MEASURES ALONG
LYNN SOUTH HARBOR BULKHEAD
Reaches B & C

Costs & Benefits ($1000, '88 P.L.)

	Alternative					
	1	2A	2B	3	4A	4B
First Cost	Dikes on Flats	Dikes Upland	Approved Dikes Upland	Walls @ Bulkhead	Walls Inland	Dikes Inland
Structures:						
Construction	2940	2789	2789	8000	1580	970
Real Estate	0	3800	1	0	724	2500
Mitigation	535	0	0	0	0	0
Total First Cost	3475	6589	2790	8000	2304	3470
Aver. Annual Cost	348	659	279	800	230	347
Shorefront Benefit	100	100	100	100	0	0
Incremental Net Avg.Ann.Cost	248	559	179	700	230	347

FLOODGATE STRUCTURE

The original 165 foot long dike and 100 foot long I-Wall sections of the floodgate structure, which tied the gates into the Point of Pines walls, has been revised to an all gravity wall section on a straight alignment with the rest of the floodgate structure. (See revised Plates D2 and D2A). It was found that the gravity wall, in lieu of dike, would reduce the construction time by about 4.5 months.

The dike would have been the last phase of construction after a retaining wall and Revere flushing gate was constructed. The gravity wall however could be constructed concurrently with other work. The major economic savings is the investment during construction. The 4.5 months saved without the dike construction, saved about $2 million in interest during construction. The gravity wall cost about $1.4 million more than the dike and I-Wall. The net savings in total investment is about $0.6 million. Using the gravity wall is also more acceptable for other reasons:

. the gravity wall eliminates a major concern for loss of beach from the original dike section expressed by the Mayor of Revere, City Councillor, Revere Planning office and residents at Point of Pines;

. the gravity wall reduces impacts on intertidal losses by 1.1 acres.

The gravity wall is therefore selected to replace the dike and I-Wall sections previously used. The straight alignment facilitates construction of the wall.

There is one change in the estimated subtidal impact computation for this area. The total subtidal acreage loss by the floodgate structure is 0.9 acres instead of the 0.6 acres previously estimated.

POINT OF PINES STRUCTURES

The straight alignment of the floodgate structure requires the gravity wall to tie into the Point of Pines wall (along Rice Avenue.) near Bateman Avenue. This results in the Point of Pines I-Wall length along Rice Avenue increasing from 700 to 940 feet (see revised Plate D9). The additional 240 feet replaces a retaining wall originally proposed between the beach and grassed area where an existing wall is located.

Along the Point of Pines ocean shorefront the revetments were originally estimated to cause a loss in intertidal habitat of 1.4 acres; ;however, the revised value is 0.7 acres with the project as now designed.

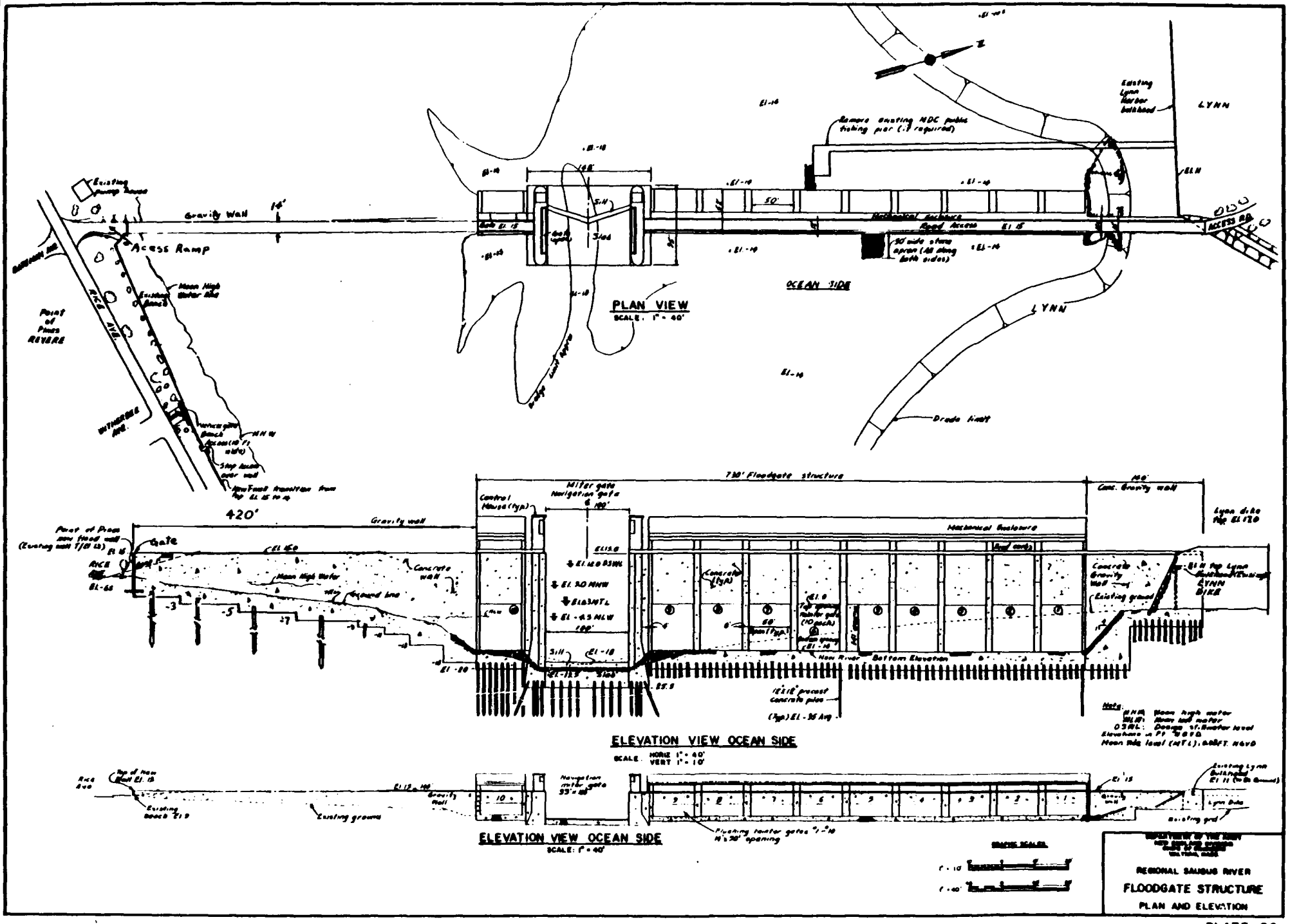

PLAN VIEW
SCALE: 1" = 40'
OCEAN SIDE
LYNN
Existing Lynn Harbor bulkhead
Remove existing NDC public fishing pier (if required)
Existing pump house
Gravity Wall
Access Ramp
Mean High Water Mkr
Point of Pines REVERE
RICE AVE.
WINTHROP AVE.
Drake Knoll
Mechanical Enclosure
Road Access
50' wide stone apron (40 along both sides)
ACCESS RD.
ELEVATION VIEW OCEAN SIDE
SCALE: HORIZ 1" = 40'
VERT 1" = 10'
730' Floodgate structure
Miter gate Navigation gate
Central House (typ.)
Gate
Concrete wall
Mean High Water
Ground line
Gravity wall
Concrete Gravity Wall
Existing ground
Lynn dike
LYNN DIKE
Mean River Bottom Elevation
12'X12' precast concrete piles
Notes:
MHW: Mean high water
MLW: Mean low water
DSRL: Design std. Routine level
Elevations in Ft "NGVD
Mean tide level (mtl.) 0.60 Ft. NGVD
ELEVATION VIEW OCEAN SIDE
SCALE: 1" = 40'
Existing ground
Navigation miter gate 95' wide
Floating tainter gates 9'-2" H x 50' opening
Existing Lynn Bulkhead El. 11 (to be demolished)
Existing grid
GRAPHIC SCALES
1" = 10'
1" = 40'
REGIONAL SAUGUS RIVER
FLOODGATE STRUCTURE
PLAN AND ELEVATION

PLATE D2

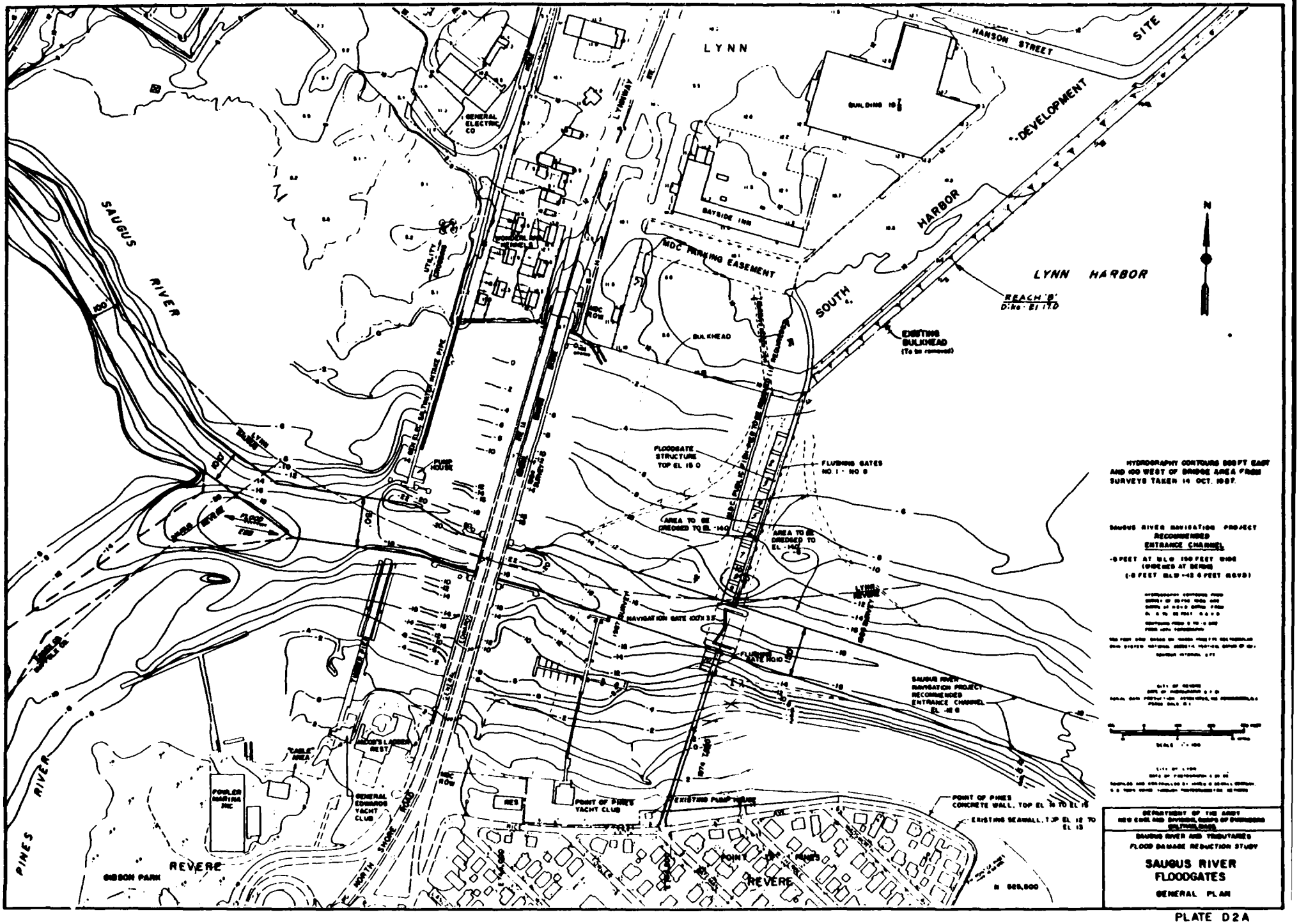
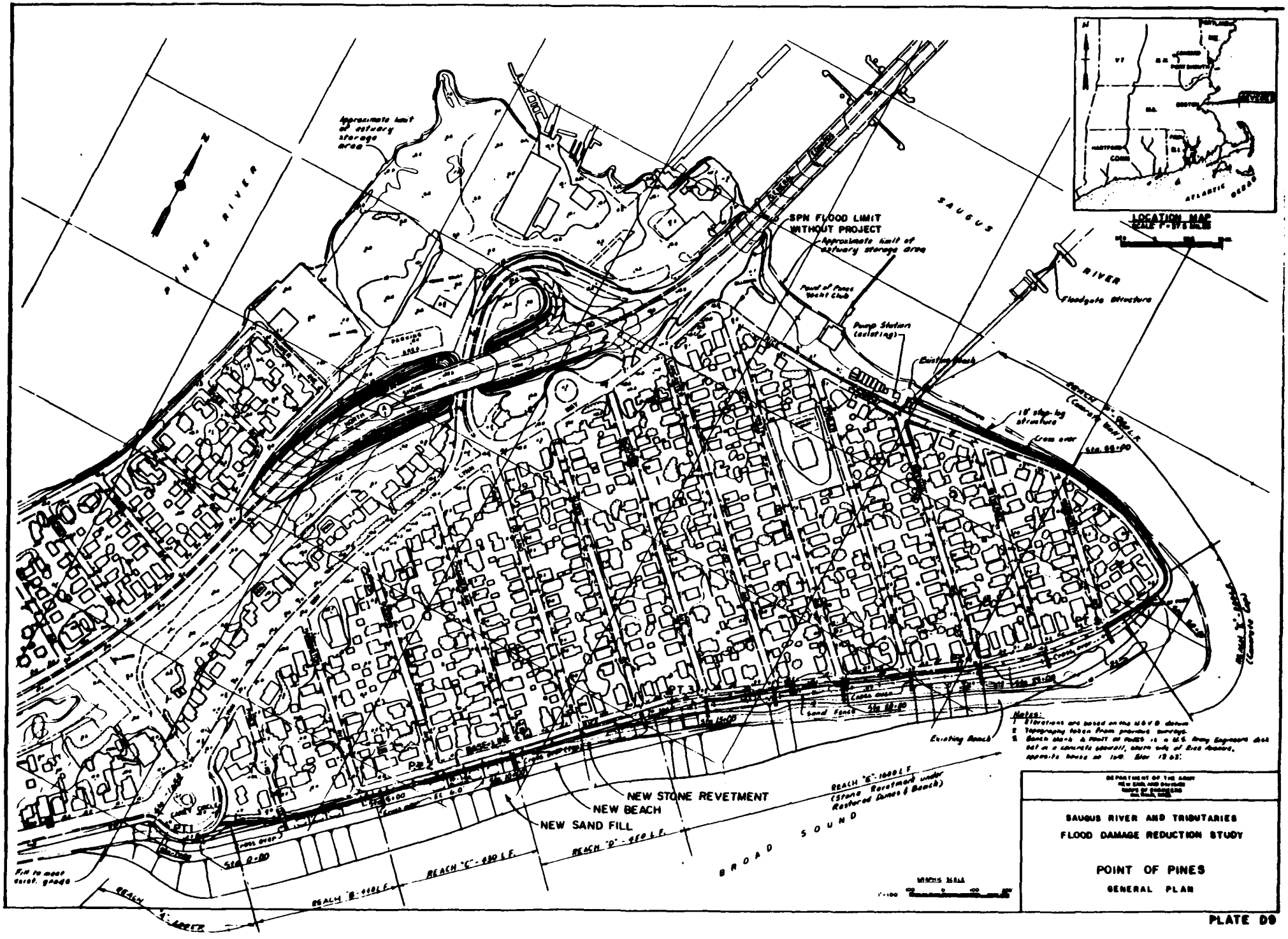

LYNN
HANSON STREET
SITE
DEVELOPMENT
HARBOR
LYNN HARBOR
SAUGUS RIVER
MDC PARKING EASEMENT
SOUTH
REACH 'B'
EXISTING BULKHEAD
(To be removed)
BULKHEAD
GENERAL ELECTRIC CO
BAYSIDE INN
FLOODGATE STRUCTURE TOP EL 15.0
FLUSHING GATES NO. 1 - NO. 8
AREA TO BE DREDGED TO EL -14.0
AREA TO BE DREDGED TO EL -14.0
PUMP HOUSE
NAVIGATION GATE WIDTH 35'
SAUGUS RIVER NAVIGATION PROJECT RECOMMENDED ENTRANCE CHANNEL EL -12.0
POINT OF PINES YACHT CLUB
EXISTING PUMP HOUSE
POINT OF PINES CONCRETE WALL, TOP EL 16 TO EL 18
EXISTING SEAWALL, TOP EL 12 TO EL 13
POINT OF PINES
REVERE
PINES RIVER
REVERE
GIBSON PARK
FOWLER MARINA INC
GENERAL EDWARDS YACHT CLUB
TABLET AREA
MOODY'S LANDING REST
NORTH SHORE ROAD
RES
N 909,000
N
HYDROGRAPHY CONTOURS 200 FT EAST AND 100 WEST OF BRIDGE AREA FROM SURVEYS TAKEN 14 OCT. 1957.
SAUGUS RIVER NAVIGATION PROJECT
RECOMMENDED
ENTRANCE CHANNEL
-9 FEET AT MLW 100 FEET WIDE
(DREDGED AT BEND)
(-9 FEET MLW =12.6 FEET NGVD)
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.
SAUGUS RIVER AND TRIBUTARIES
FLOOD DAMAGE REDUCTION STUDY
SAUGUS RIVER
FLOODGATES
GENERAL PLAN

PLATE D2A


PINES RIVER
SAUGUS RIVER
Approximate limit of estuary storage area
SPN FLOOD LIMIT WITHOUT PROJECT
Approximate limit of estuary storage area
Pond of Pines Yacht Club
Pump Station (exterior)
Existing Beach
Floodgate Structure
18' stop-log structure
Cross over
Sand Fence
Existing Beach
NEW STONE REVETMENT
NEW BEACH
NEW SAND FILL
BEACH "C" - 1600 L.F.
(Stone Revetment under Restored Dunes & Beach)
BEACH "B" - 440 L.F.
BEACH "C" - 430 L.F.
BEACH "B" - 440 L.F.
BEACH "A" - 1000 L.F.
BROAD SOUND
Fill to meet exist. grade
Sta. 0+00
Sta. 5+00
Sta. 6+00
Sta. 11+00
Sta. 16+00
Sta. 22+00
Sta. 33+00
Sta. 44+00
Sta. 55+00
Sta. 66+00
Sta. 77+00
Sta. 88+00
Sta. 99+00
PT 1
PT 2
PT 3
LOCATION MAP
SCALE 1" = 375 MILES
Notes:
1. Elevations are based on the N.G.V.D. datum.
2. Topography taken from previous surveys.
3. Bench mark is result of levels to a U.S. Army Engineers disk set in a concrete seawall, south side of Bay Avenue, opposite house no. 109. Elev. 12.03.
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.
SAUGUS RIVER AND TRIBUTARIES
FLOOD DAMAGE REDUCTION STUDY
POINT OF PINES
GENERAL PLAN
PLATE D9

MITIGATION SITE

The size and location of the mitigation site have been revised due to reduced project related impacts.

The following table compares the revised impacts which must be mitigated:

Intertidal	Former Plan	Revised Plan
Lynn Harbor Dikes	5.6 Ac	0
Point of Pines Revet.	1.4	0.7
Floodgate Structure	1.4	0.3
Floodgate Dredge Area	1.0	1.0
Total Intertidal:	9.4	2.0 Ac
Subtidal		
Floodgate	0.6	0.9
Lynn Wall (Reach D)	—	0.1
Total Inter and Subtidal	10.0 Ac	3.0

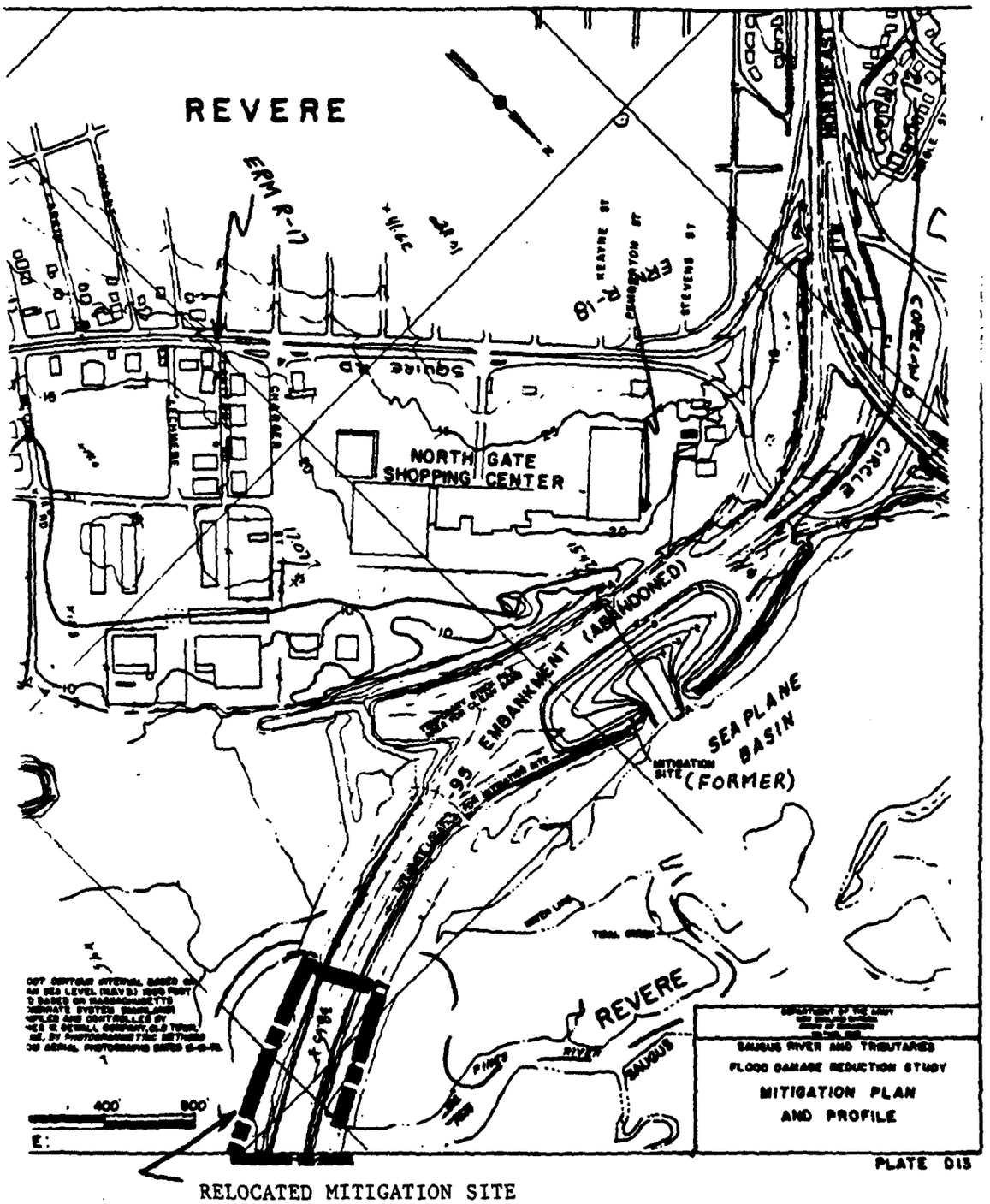
The revised total acreage of intertidal impacts requiring mitigation is 2.0 acres and subtidal is 1.0 acres.

The proposed location of the mitigation site at the I-95 fill was relocated from near the Northgate Shopping Center to the northeast end of the fill near the Pines River, as shown on Plates D13 (revised) and D13A, away from the proposed location of the Revere Connector highway.

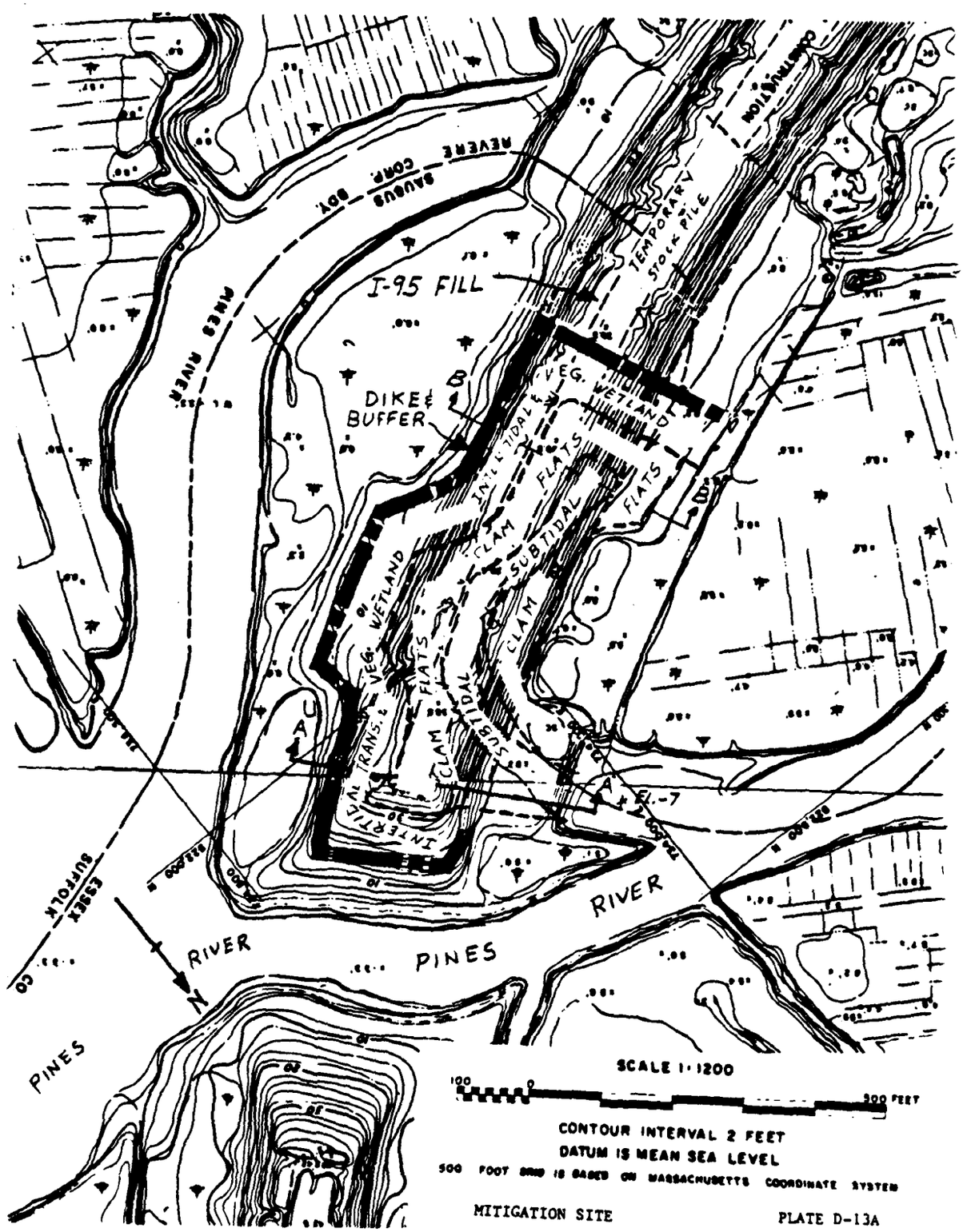
The revised profiles of the mitigation site are shown on Plate D13B. The 2.0 acre of intertidal flats are located in the most viable location within the range of the tides between mean tide level at approximately EL. 0 and mean spring low water at EL. -5.2. The 1.0 acre subtidal below EL. -5.2 runs through the center of the site. A fringe of vegetated wetlands would be planted between EL. 4 and 6 with an intertidal transition zone between vegetated wetlands and the areas colonized by clams. A ten foot wide buffer zone is located between the berm at EL. 15 and the side slope of the vegetated area. The berm would be used for inspection access around the site The total acreage of the site which would average about 850 feet long and 330 feet wide is:

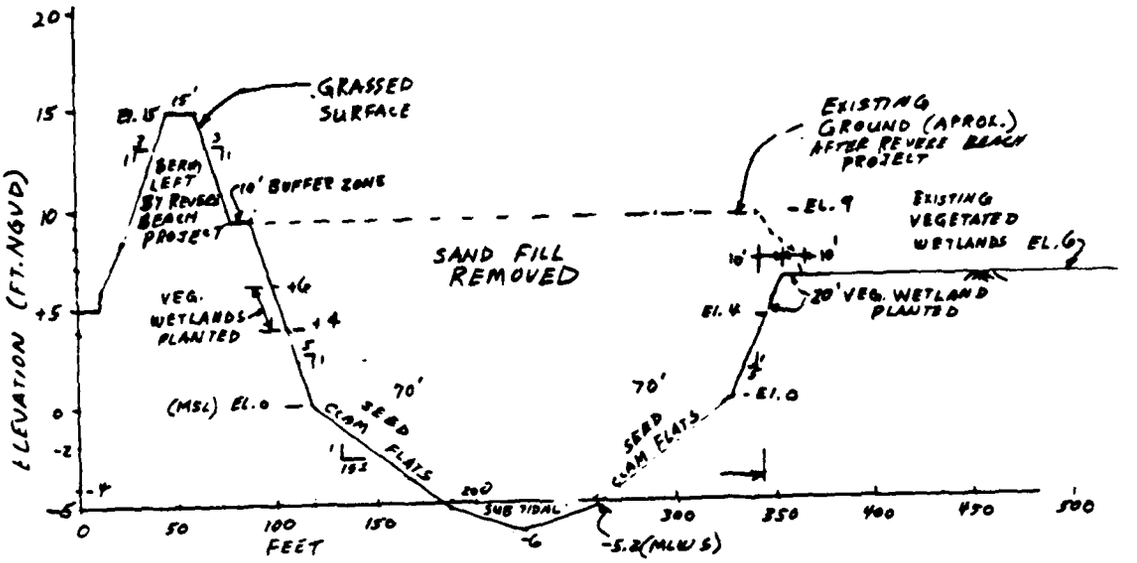
	Acreage	
Total Clam Flats	2.0 Ac	
Subtidal	1.0 Ac	
Intertidal Transition	0.7 Ac	
Veg. Wetlands:	0.5 Ac	
Buffer + Dike:	2.3 Ac	seeded
TOTAL	6.5 AC	permanent easement

The site would include excavation of about 69,740 cy. About 30,370 cy of clean sand excavated above EL. 5 could be totally used as random fill in the Park Dike. The 39,370 cy of potentially salty sand below EL. 5 would be used in part (4000 cy) to build the relocated berm on the east side of the site and the remaining 35,370 cy of salty sand would be stockpiled at the west side of the site on a 2.0 acre temporary easement for use by others.

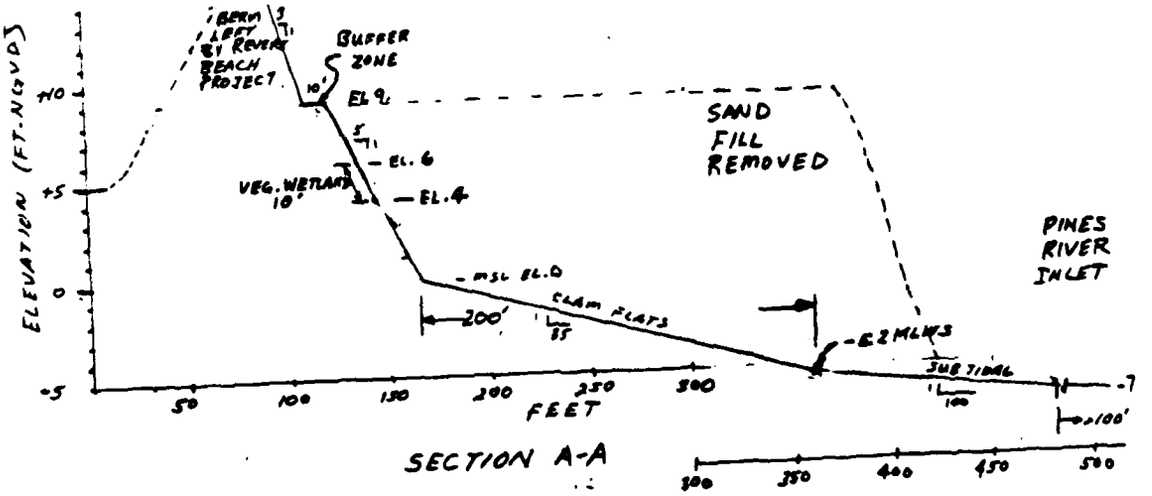


RELOCATED MITIGATION SITE


I-95 FILL
TEMPORARY STOCK PILE
DIKE & BUFFER
VEG. WETLAND
INTERTIDAL FLATS
CLAM FLATS
SUBTIDAL
VEG. WETLAND
INTERTIDAL FLATS
CLAM FLATS
SUBTIDAL
EL.-7
PINES
RIVER
PINES
SCALE 1:1200
100 0 200 FEET
CONTOUR INTERVAL 2 FEET
DATUM IS MEAN SEA LEVEL
500 FOOT GRID IS BASED ON MASSACHUSETTS COORDINATE SYSTEM
MITIGATION SITE
PLATE D-13A



SECTION B-B



SECTION A-A

PLATE D-13B

GENERAL RESPONSE #1

Method for Protection of Estuary Storage Capacity

Public comments received during the draft review of the Feasibility Report and EIS/EIR emphasized the importance of strong project measures to protect the wetland storage area both from illegal fill activities and to prevent induced development which would result in filling.

Induced development was identified as a potential major impact at the beginning of the study and an independent consultant was hired by the Corps to study this issue. Results of that study indicate that the project would not exhibit a significant impact on development due to the existing regulatory protection of the wetlands, which would not change, and to marginal cost savings expected to accrue to new construction in areas adjacent to the wetlands, particularly the avoidance of flood-proofing costs. It was found that development decisions in the study area were far more sensitive to factors such as interest rates, demand and supply for housing, location factors such as nearness to transportation facilities and water, etc. Finally, there is very little undeveloped land left in the study area and typical of most highly developed urban areas more intensive development is simply taking place largely at the expense of existing less intensive developments. No major land use changes are occurring or are foreseen with the proposed project.

The Draft Report and appendicies described the role which the natural storage in the estuary played in assuring an adequate area for storage of interior runoff and wind driven ocean waters which overtop shoreline protective structures. The selected plan - Option 3 required the protection of 5400 acre-feet of storage capacity between +2 and +8 feet NGVD in the estuary and bounded by the elevation 7 contour. All of the estuary wetlands lie below elevation 7 feet NGVD.

In the Draft Report it was expected that future controls over wetland development and project estuary storage protection would be accomplished primarily using existing measures such as:

- The Massachusetts Wetland Protection Act
- Massachusetts Environmental Policy Act (MEPA)
- Area of Critical of Environmental Concern (ACEC) designation and associated standards which modify other state regulatory programs.
- Implementation of the Massachusetts Coastal Wetland Restriction Program in the study area in the near future.
- Floodplain Management Programs of Local Communities
- National Flood Insurance Program
- Federal Section 404 Regulatory Program

During the Washington level review of these measures it was concluded that the surest and soundest way to protect the storage capacity in the estuary over the next 100 years would be to acquire a real estate interest in the estuary.

The recommended plan requires protection of 5,400 acre feet of storage capacity between +2 and +8 feet NGVD in the main estuary. To provide this storage capacity, acquisition of a real estate interest through fee or easement for all main estuary lands below elevation 7 feet NGVD would be accomplished. This area totals about 1650 acres and includes about 360 private and public parcels of land. Estimated acquisition costs including necessary survey, appraisal and administrative costs totals some $6 million dollars.

The project costs in the main report have been revised to reflect necessary acquisition costs. Responsibility for implementation of this action would rest with the non-Federal sponsor and is an item of local cooperation.

GENERAL RESPONSE #2

Non-structural Plans

A number of comments were received from Federal and State environmental resource agencies and environmental interest groups requesting additional analysis for a total non-structural plan. The MA Department of Environmental Management requested the Corps to develop plans to achieve 100% protection through non-structural measures of the four major vulnerability categories - personal safety, transportation, employment, and property damage with data for the 100 year flood with a one-foot sea level rise factor added and the SPN level.

The following discussions address these comments and provide information on the efficiency/effectiveness of a non-structural plan which would modify or provide protection to all flood plain structures.

Personal Safety

Providing personal safety for the 20,000 residents and as many employees in the flood plain is difficult for this coastal flood plain. The major problem is to determine when and to what extent evacuation is necessary in a timely manner. Personal safety with non-structural measures requires evacuation of each building which may be surrounded by water when all essential services (electricity, heat, sewage, medical attention and fire protection) are cut off from the residence or building during a storm. For such a large urban flood plain, at least several hours of advanced warning is needed for residents and employees to evacuate themselves, and for the communities to assist in evacuating the large number of nursing homes and elderly housing. Historically severe events such as the 1972 and 1978 storms have trapped large numbers of people who required evacuation through the surrounding water.

The January 1987 flood is one example which illustrates the difficulty in predicting storm surges and flood heights necessary to insure evacuation of the floodplain population. Briefly, the National Weather Service sent out storm advisories well in advance of the flood, forecasting the time of high tide, a potential surge of 2 to 3 feet, and that flooding could approach that of the 1978 (100 year) levels. (See Figure 1)

Coastal Flood Statement for Massachusetts, National Weather Service Boston, MA, 9:00 am EST Fri Jan 2 1987

> "Coastal flood warning in effect for today...Major flooding of low lying areas likely during late morning and early afternoon hours... An intense winter storm was located about 100 miles south of Nantucket island at 8 am this morning... moving northeast at 25 MPH. Northeast winds of 40 to 55 MPH can be expected along the east coast of Massachusetts much of today. The Combination of astronomically high tides and storm force winds will cause considerable flooding of low lying ground along north and east facing coastal areas. Beach erosion by surf battering will also wrack the coast. Times of high tide... Tide weights (not including storm surge)... And coastal flood statistics for selected locations are as follows:..."

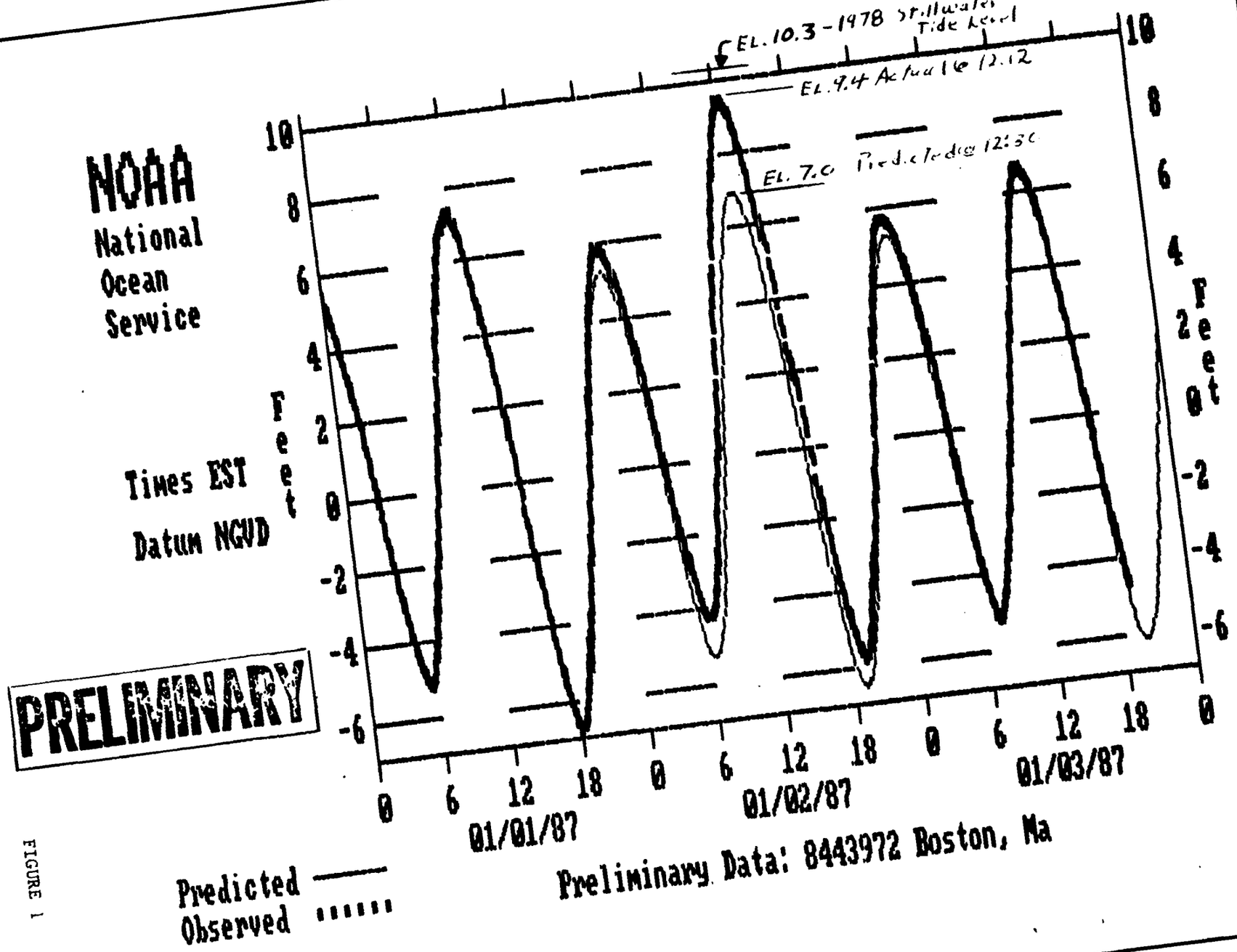

EL. 10.3 - 1978 Stillwater Tide Level
EL. 9.4 Actual @ 12:12
EL. 7.0 Predicted @ 12:30
NOAA
National
Ocean
Service
Times EST
Datum NGVD
PRELIMINARY
Feet
10
8
6
4
2
0
-2
-4
-6
0
6
12
18
01/01/87
01/02/87
01/03/87
Predicted
Observed
Preliminary Data: 8443972 Boston, Ma

FIGURE 1

LOCATION	TIME	HEIGHT FT (Elev., Ft. MLW)	FLOODING BEGINS FT (Elev., Ft. MLW)
BOSTON	12:33 PM	11.5	13.8

"A storm surge of 2 to 3 feet... added to these tide heights... could mean a surge which might approach that of the the 1978 blizzard... resulting in major flooding along east and north facing coastlines. All residents... especially along north and east facing shorefronts... should have plans for evacuation when flood waters threaten. People living in areas prone to coastal flooding should be ready to follow the advice of State and Local Emergency Officials.

Stay tuned to local radio... TV... or NOAA Weather Radio for the latest forecasts and information on this dangerous coastal storm.

The next statement on this coastal flood situation will be issued by the National Weather Service at 2 PM this afternoon... or sooner if needed."

Coastal Flood Statement for Massachusetts, National Weather Service Boston MA, 10:15 AM EST Fri Jan 2, 1987

"... Coastal flood warning in effect form Chatham north to the Merrimack river today... coastal flood warning discontinued from Chatham west along the southern New England coast...

An intense winter storm was located about 100 miles south of Nantucket Island at 8 AM this morning... Moving northeast at 25 MPH.

Northeast winds of 40 to 55 MPH can be expected along the east coast of Massachusetts much of today. The combination of astronomically high tides and storm force winds will cause considerable flooding of low lying ground along north and east facing coastal areas. Beach erosion by surf battering will also wrack the coast.

Times of high tide... tide heights (not including storm surge)... and coastal flood statistics for selected locations are as follows:

"A storm surge of 2 or 3 feet... added to these tide heights... could mean a surge which might approach that of the Feb 1978 Blizzard... and cause serious flooding along the north and east facing coastlines in Massachusetts... From Chatham northward to the Merrimack River. All residents... especially along north and east facing shorefronts... living in areas prone to coastal flooding should be ready to follow the advice of State and Local Emergency Officials.

Stay tuned to local radio... TV... or NOAA Weather Radio for the latest forecasts and information on this dangerous coastal storm. The next statement on this coastal flood situation will be issued by the National Weather Service at 2 PM this afternoon... or sooner if needed."

Due to changed meteorological factors, the flood actually turned out to be generally a 10 to 15 year event and only a few hundred people evacuated; most did not. Due to the uncertainty of the exact depth of flooding and geographic extent following the Weather Service bulletins, warnings could have resulted in almost 40,000 people being evacuated in the 100 year flood plain. The vast majority of residents would never have seen flooding around their properties, and the effects of "crying wolf" would have undoubtedly affected future evacuations.

Predicting the extent of coastal flooding for evacuation purposes is very unreliable. A forecast of a 2 to 3 foot surge may mean either a 10 year or 100 year flood, the difference between minor street and basement flooding or evacuation of 500 to 1000 homes and major flooding of arteries. Forecasting of depths and areas affected is not sufficiently accurate to assure responsiveness of residents particularly after repeated warnings for evacuations have occurred. As reported in Saugus, for example, residents refused to evacuate in January 1987.

As sea level rises, warnings could increase 2 to 3 times a year gradually increasing with one foot of sea level rise to 35 to 45 times a year, nearly half could be false alarms and the responsiveness would be very low. Just as important is the high cost and effort involved with such a large number of emergencies and evacuations each year. Assuring public safety could not be accomplished with a non-structural plan, even though the communities have emergency evacuation plans.

Transportation

Flooding of the major arteries (Route 1A, 107, MBTA bus routes, the T's Blueline and B&M Commuter Rail) occurs with 10 year tides and with a one foot sea level rise would occur nearly every year. Most of the commuters going to and from work would either be detoured to an already congested Route 128 (I-95). Only those 12,500 commuters using public transportation with the Blueline and Commuter Rail would likely benefit from alternate public transportation arrangements. Therefore most commuters would face extensive delays in bypassing the study area (5 miles from Boston) and traveling an additional 20 to 40 miles on already congested roads.

Property Damage and Employment

The following paragraphs describe methods which could be used to approach 100% protection of properties which in turn would reduce impact on lost employment. The analysis includes either raising or flood proofing all residents and businesses subject to flooding in the 100 year plus 1 foot sea level rise and SPN flood plains. A building by building damage analysis was used to determine which residents had flooding high enough to affect their first floors and these properties were considered candidates for raising.

Residents with water above their ground levels but below the first floor were candidates for floodproofing their basements. Commercial buildings and storage yards for supplies and equipment would be protected by walls or dikes to prevent damages. In most cases groups of commercial storage yards and buildings would be protected in clusters, rather than at a much higher individual cost. Topographic mapping was used to estimate the clusters of commercial properties requiring protection of storage and equipment areas. The average heights of walls would be four to six feet which includes two feet of freeboard.

Residential Raising and Flood Proofing

The non-structural analysis presented in Appendix A of the feasibility report found that only about 8 percent of the residential buildings in the 100 year flood plain were economically efficient candidates for raising, that is, each building produced higher benefits from raising than the cost. For comparison to the Regional Plan, this analysis evaluates the cost to raise every residential building in the 100 year plus one foot and SPN floodplains when flood levels exceed the first floor. All other buildings within these flood plains would have their basements flood proofed. Costs were developed from the FEMA publication "Floodproofing Non-Residential Structures" dated May 1986. The height to raise each building was developed by subtracting the surveyed first floor elevation of each building from the flood plain elevation under consideration. Raising Criteria is shown in Table 10. The average costs were based on sampled costs for each community shown in Table 10, and estimated costs to raise each additional foot. The cost of floodproofing is summarized in Table 11. The number of buildings which would need to be raised or floodproofed and their first costs are shown in Tables 2 and 3. The economic feasibility of these measures are shown in Tables 4 and 5. The results show that a total non-structural plan to provide nearly 100 percent protection to residential buildings for either 100 year + 1 ft. or SPN protection is not economically justified for any community.

Table 2

RESIDENTIAL BUILDINGS RAISED OR FLOOD PROOFED

	Buildings Raised		Basements Flood Proofed	
	(100 yr + 1 ft)	SPN	(100 yr + 1 ft)	SPN
Lynn	352	431	9	120
Saugus	428	480	49	45
Revere	444	589	151	340
TOTAL	1224	1500	209	505
Pt.of Pines	214	219	15	74
TOTAL	1438	1719	224	579

Table 3
RAISING AND FLOOD PROOFING FIRST COST
($ millions 1988 P.L.)

	Raising Buildings (100 yr + 1 ft)	Raising Buildings SPN	Flood Proofing (100 yr + 1 ft	Flood Proofing SPN
Lynn	$13.1	$16.6	$ 0.2	$ 2.5
Saugus	20.7	34.0	1.0	1.0
Revere	15.5	21.3	3.1	7.0
TOTAL	$49.3	$61.9	$ 4.3	$10.5
Pt.of Pines	10.3	11.0	1.5	1.5
TOTAL	$59.6	$72.9	$ 5.8	$12.0

Table 4
RESIDENTIAL FLOOD PROOFING ECONOMICS, 100 YEAR + 1 FT SLR PROTECTION

	Raising and Flood proofing ($ millions)	Avg Ann Cost ($ 1000)	Avg Ann** Benefits ($ 1000)		
Lynn	$ 13.3	$1330	$ 530		
Saugus	21.7	2170	850		
Revere	18.6	1860	1740		
TOTAL	$ 53.6	$5360	3120	BCR:	0.6
Pt.ofPines	11.8	1180	1058		
TOTAL	$ 65.4	$6540	$ 4178	BCR:	0.6

Table 5
RESIDENTIAL FLOOD PROOFING ECONOMICS, SPN PROTECTION

	Raising Flood Proofing ($ millions)	Avg Ann Cost ($ 1000)	Avg Ann** Benefits ($ 1000)	
Lynn	$ 19.1	$ 1910	$ 550	
Saugus	25.0	2500	900	
Revere	28.3	2830	1820	
TOTAL	$ 72.4	$ 7240	3270	BCR: 0.5
Pt.of Pines	$ 12.5	1250	1129	
TOTAL	$ 84.9	$ 8490	$ 4399	BCR: 0.5

**Benefits include reduction in flood damages including sea level rise, affluence and flood insurance overhead.

RING WALLS - COMMERCIAL/INDUSTRIAL

In Revere several methods were considered to establish a total plan. For the south half of Revere Beach, the Park Dike located at either side of the MDC Police Station could be used to prevent coastal flooding behind Ocean Avenue in Revere's zones 2A, 2b and 3 provided the area is also closed off from high flood levels in the Crescent Beach and Kelleys Meadow areas with gated closures at Beach and Revere Streets. Since flooding from interior runoff would continue to be a problem to low residential buildings, these buildings would be raised or floodproofed.

Other residence in zones 1, 4A - C and 5A - D would also need to be raised or flood proofed, that is the Crescent Beach/Garfield School areas, Kelleys Meadow, Oak Island, Riverside, Revere Beach Boulevard and Northgate. The commercial properties in these Revere Zones would be protected by ring walls (Table 6).

Commercial buildings with storage yards are clustered in three locations along the Pines River requiring about 8,500 feet of ring walls around their properties. The Northgate area would need 3,500 feet of ring walls and to protect the Town Line Brook area would require raising the MDC dike for about 2,000 feet. Two other commercial buildings would need ring walls in Point of Pines and at North Shore Road (1A). Altogether about 19,000 feet of dikes or ring walls would protect commercial property in Revere. The combined cost is shown in Table 6 for ring walls.

In Saugus commercial property and storage areas for automobiles, boats and fishing gear/supplies are located along about 3,000 feet of the Saugus River requiring 6,200 feet of walls to protect their storage areas. In addition there are four other businesses in East Saugus and in the Upper Saugus River requiring 6,600 feet of walls to protect their storage and equipment areas.

In Lynn nearly half of the buildings are commercial properties with vast areas devoted to new/used car lots, garages, lumber yards, electrical switching stations, gas pipes, equipment and material storage. Along Lynn Harbor, the north end of the harbor and all of Route 1A is lined with these commercial buildings. A single ring wall plan could encircle these properties collectively at a lower cost than individual protection. About 5,600 feet of shorefront protection coupled with 13,000 feet of inland walls could be used. General Electric includes about 250 buildings surrounded by switching station, underground fuel tanks, electrical cables, cooling systems, stock yards and equipment. Protection of the entire area with a wall encircling the area is far more feasible than attempting to protect each building and exterior storage area or facility. Along the shorefront 5,200 feet of walls and dike are required with 7,200 feet of inland walls. Along the remainder of the Saugus River in Lynn are about 5,800 feet of shoreline bordered by marinas, dog kennels, green houses, oil company, a manufacturer and other storage facilities. In addition to the shoreline, 6,200 feet of inland walls would be needed.

Table 6
Non-Structural
Ring Wall Costs

Revere		100 yr + 1 ft Protection	SPN
Zone 2A, 2B, 3 (all) Park Dike & Closures	3420 ft	$4.0 Mill.	$4.8 Mill.
4B (1 ea) Garage Yard	700 ft		
5A (1) North Shore Marine	1000 ft		
(4) Fowlers Marina et. al.	2400 ft		
5C (4) Logan Auto et. al.	1700 ft		
(6) Rent-a-Tool et. al.	3400 ft		
Point of Pines (1) Yacht Club	1000 ft		
Northgate Area + 107 (12)	3500 ft		
Town Line Bk Dike Area (all)	2000 ft		
	15700 ft	$19.8 Mill.	$23.8 Mill.
	3.6 miles		
	Revere Total:	$23.8 Mill.	$28.6 Mill.

Saugus		100 yr + 1 ft Protection	SPN
(2) Upper Saugus River	5600 ft		
3 (2) Oil Co. et. al.	1000 ft		
1 Reach C-Auto's & Marina's (10)	3000 ft		
1 Reach D-Marina's et.al. (10)	200 ft		
Saugus Total:	12800 @		
	2.4 miles	$16.1 Mill.	$19.4 Mill.
Lynn			
1 Reach D, E, F Shoreline (all)	5600 ft		
Inland along 1A	13000 ft		
2 Around GE: Shore	5200 ft		
(all) Inland	7200 ft		
3 Dog Kennels, Greenhouse (all) to Hathaway & Oil Co.			
Shore:	5800 ft		
Inland:	6200 ft		
Lynn Total:	43000 @		
	8.1 miles	$54.2 Mill.	$65.0 Mill.
	PLAN TOTAL	$94.1 Mill.	$113.0 Mill

The estimated commercial benefits for ring walls and recreation benefits for the park dike are shown in Table 7. The economic analysis in Table 8 shows the non-structural plan is not economically justified for commercial buildings.

Table 7
Commercial Ringwall and Dike Benefits ($1000)

	100 yr + 1 ft	SPN
Revere	$ 610	$ 680
Lynn	$1860	$1950
Saugus	$ 120	$ 130
TOTAL	$5765	$2760
Other Benefits:		
Recreation @ Park Dike	$ 415	$ 415
Total Benefits	$3005	$3175

Table 8
Economic Analysis - Commercial ($1000)
(1988 P.L.)

	100 yr + 1 ft	SPN
First Cost ($1000)	$94,100	$113,000
Int. During Constr.(2yrs) @ .09	$ 8,500	$ 10,200
Invest.	$102,600	$123,200
Interest & Amory.(.08876)	$ 9,100	$ 10,900
O&M (.02)	$ 200	$ 200
Avg. Annual Cost	$ 9,300	$ 11,100
Avg. Annual Benefits	$ 3,005	$ 3,175
Benefit to cost Ratio	0.3	0.3

Cost and Economic Summary

Table 9 summarizes the first cost, benefits and a display of the economics of developing a non-structural plan to protect all structures within the study area flood plain. As shown the first cost for implementing such a plan would total about $148 million for the 100 year plus 1 foot flood plain and $185 million when the possible effects of the SPN are considered, and with Pt. of Pines added the total costs are $160 and $198 million, respectively.

As shown a non-structural plan which protects all structures is well below unity in the benefit/cost ratio.

Table 9
TOTAL NON-STRUCTURAL PLAN SUMMARY

	Costs ($millions)			
Level of Protection:	100 yr + 1 ft		SPN	
First Cost:				
Raise and Flood proof Residential Buildings	$ 53.6		$ 72.4	
Ring Wall for Commercial Buildings	$ 94.1		$113.0	
Total First Costs (with Pt.of Pines)	$147.7	(159.5)	$185.4	(197.9)
Total Annual Cost (w/Pt. of Pines)	$ 14.7	(16.0)	$ 18.3	(19.8)
Total Annual Benefits (w/Pt. of Pines)	$ 6.1	(7.2)	$ 6.4	(7.5)
Benefit to cost Ratio (w/Pt. of Pines)	0.4	(0.4)	0.3	(0.4)

Non-structural Evaluation Summary

As discussed in the previous pages use of a non-structural alternative to protect all flood plain residents and businesses suffers from several serious flaws. First were in cases where property can be protected effectively, the uncertain nature of flood warnings necessary to assure safe evacuation of the residents places those residents at risk.

Second, raising and flood proofing residences and ring walls to protect commercial/industrial properties is expensive and not economically efficient. Additionally even if water can be kept out of buildings, the residents and customers face dislocation until the flood waters have receded, any damaged infrastructure repaired and the public safety of the area assured.

Finally the non-structural plan components do not protect the transportation facilities which service both residents and commuters. Disruptions in this area would continue.

SAUGUS RIVER NON-STRUCTURAL ANALYSIS
Table 10
COST OF RAISING BUILDINGS

CRITERIA (Reference Floodproofing Non-Residential Structures, FEMA, May 1986)

Raising Costs for Single Story*	Unit Cost/SQ. FT. (9/85 P.L.)	(1.067) (5/88 P.L.)
Raising the Structure:		
Slab-on-Grade	$12.90	$13.76
Brick or Masonry	$ 8.10	$ 8.64
Wood Frame	$ 4.10	$ 4.37
Extend Access & Utilities	$ 3.80	$ 4.05
Support Systems (Raise L.T.5')	$ 5.45	$ 6.35
Support Systems (Raise 5' to 7')	$ 6.14	$ 6.55

*Used same costs for multi-story buildings.

HOW CRITERIA WAS USED

Raise Single Story Building Slab-on Grade with 1200 square feet, a height of 3 feet.

		Cost (88 P.L.)
Raise Structure (1200 SF @ $13.76/SF		$16,512
Extend Access & Utilities (1200 @ 4.05)		4,860
Support Systems (1200 @ 6.35)		7,620
Sub Total	$28,992	
25% Contingency	7,248	
Construction Cost	$36,240	
25% Engr. & Design, Supv. & Admin.	9,060	
First Cost	$45,300	

COMMUNITY RESULTS SAMPLED

	DETAILED ANALYSIS Sample # Bldgs	Avg Ht raised	DETAIL ANALYSIS Avg. Sampled Cost
Revere	62	4.2 ft	$37,276
Lynn	31	1.6 ft	$34,900
Saugus	126	1.8 ft	$46,600

AVERAGE RAISING COSTS FOR TOTAL NONSTRUCTURAL PLAN (Residential)

Revere: Raise 1 ft at $30,600 + 2100 for each additional foot of height (for concrete)

Lynn: Raise 1 ft at $33,600 + 2100 for each additional foot of height

Saugus: Raise 1 ft at $44,900 + 2100 for each additional foot of height

Table 11
Floodproofing Basements

Reference: Floodproofing foundations "Floodproofing Non-Residential Structures", May 1986 FEMA, pg. 109.

Floodproofing Items

1. Floodshields for windows $45/SF
2. Waterproof walls and floors $1.85/SF new and excav.
3. Subfloor drainage $26/LF
4. Backflow prevention

Major Costs

1. Floodshields for windows
   basement windows, use 15.5 SF @ $45/SF = $700

2. Waterproof walls and floors foundation: 35'x30'x6'(Assumed Avg. Basement)

   Walls: excavate to expose walls = 70 + 60 = 130' perimeter
   Excavate: 0.5 (6') (6') (130') 27 * $16/cy = $1400
   Paint: clean wall & paint: 2($1.85/sf) * 130' * 6' = $2,900
   Floors: clean & paint : 2 ($1.85) (35' x 30') = $3,900

3. Subfloor drainage: $26/LF (excludes pumps)
   $26/LF (130') = $3,400

4. Backflow prevention of sewer line: gate on sewer line + concrete excavation + earth excavation = $720 + 105 + 27 = $830 say $900

Total Direct Cost:

		$ 700	
		1400	
		2900	
		3900	
		3400	
		900	
		$13,200	
Coning	1.25	$16,500	
EDSA	1.25	$20,625	Say $20,600 to floodproof basements.

GENERAL RESPONSE #3

Lynn Harbor Dikes

A number of commentors objected to the placement of dikes as the protective measure along Lynn Harbor. The objections were primarily targeted to the loss of 4.6 acres of intertidal habitat. In response to those comments a series of meetings were held with representatives of the Lynn South Harbor Development Corp., Lynn Planning Office, Office of Coastal Zone Management as well as Washington level review representatives of the Corps of Engineers.

As a result of those meetings and additional information furnished by several parties, those particular features of the project have been revised. The dike has been relocated inland of the existing bulkhead as shown in Figure .

This relocation site considers the without project condition to include an approved dike design by the developer of the Lynn south harbor area to be in place.

The Report and EIS/EIR has been revised to reflect this change.

GENERAL RESPONSE #4

Sea Level Rise

A number of comments were directed toward the effect sea level rise would have on the recommended plan and the economic efficiency, feasibility, and impacts of other alternatives. The following paragraphs discuss sea level rise and its effects.

The main report and appendixes provide information describing the factors which influence sea level rise for the historical rate of rise of about one foot (0.8 feet) per century and the potential for future accelerated rates. The National Research Council provides three potential cases for future increases from 1987 over the next 100 years, 1.6 feet (Case I), 2.9 feet (Case II) and 4.2 feet (Case III). Corps guidance requires the formulation of projects for the historical rate and a sensitivity analysis for Case III. Table 12 and Figure 2 show the potential years when each foot of sea level rise would be expected for each case of sea level rise.

TABLE 12
POTENTIAL FUTURE SEA LEVEL RISE FROM 1997 (Project Start)

	Historical Rate	Case I NRC	Case II NRC	Case III NRC
1 Ft. Rise	100 yrs.	65 yrs.	45 yrs.	35 yrs.
2 Ft. Rise		100 yrs.	70 yrs.	55 yrs.
3 Ft. Rise			90 yrs.	75 yrs.
4 Ft. Rise			100 yrs.±	90 yrs.

FUTURE CONDITIONS WITH SEA LEVEL RISE

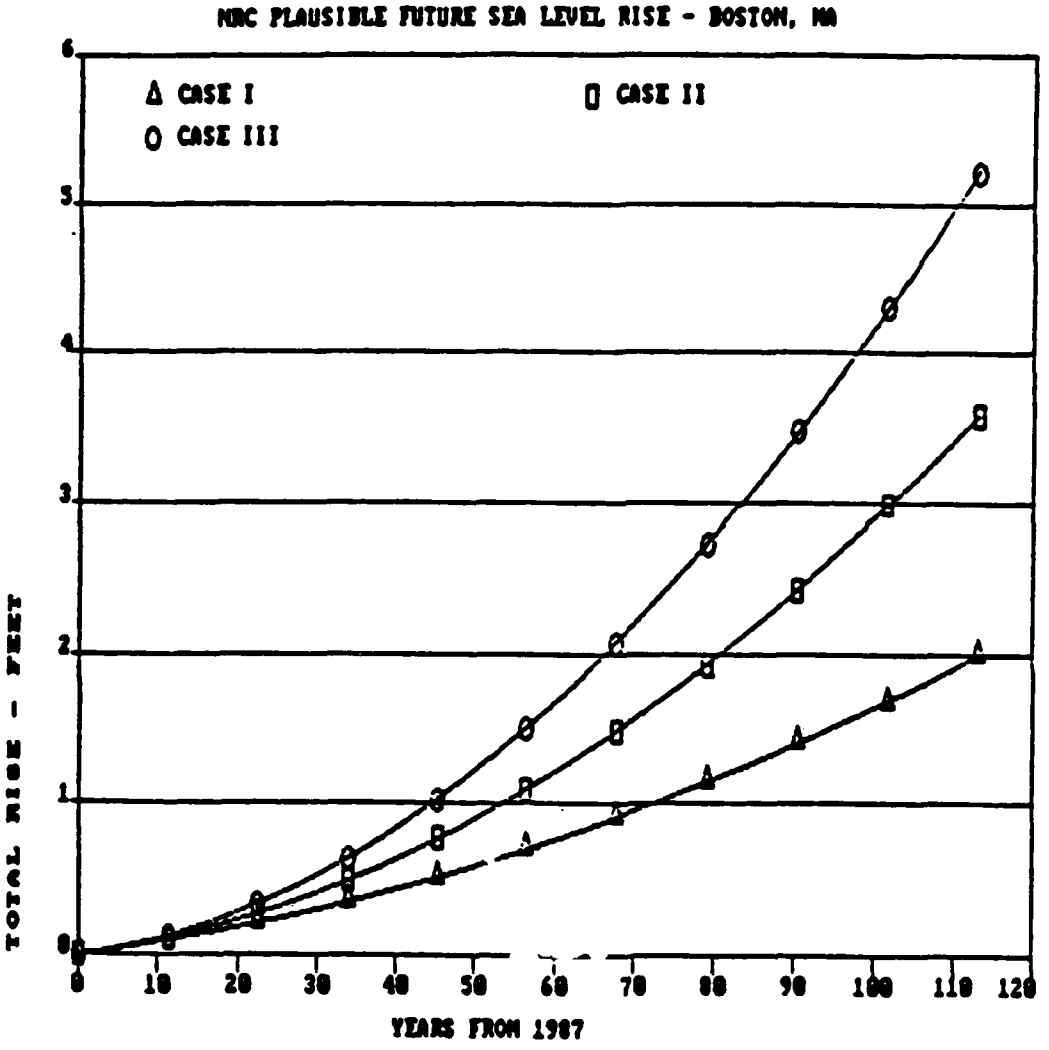
Without Project Conditions

The effects of future sea level rise in the study area, without a Federal Flood Protection Plan, would likely cause many changes:

Coastal Flooding

Tidal flooding in the study area would significantly increase in frequency and intensity. The higher depths of water in Broad Sound would support higher waves, erosion of beaches, and increased volumes of overtopping. The raised shoreline around the estuary would result in higher depths of flooding as tide water overtopping shorefronts would become trapped in areas of developed property. It would become more difficult to evacuate people and life threatening situations could arise due to more rapid and higher depths of flooding.

With rising sea level more and more of the shorefront along the ocean in Broad Sound and around the estuary would be overtopped on a yearly basis. The shorefront property owners and communities would likely press to continue to raise their shorefronts to keep pace with sea level rise and frequent storm conditions and to protect the existing investment currently estimated in excess of 2 billion dollars.



PLAUSIBLE SEA LEVEL RISE FROM NATIONAL RESEARCH COUNCIL-1987

FIGURE 2

Construction of walls and dikes around the estuary could cause some impact on the estuary; however, the Wetland Restriction Program (required by the ACEC designation to be implemented in the near future) would legally restrict any filling in the estuary. All structures, walls or dikes, would be built on the shoreline above the level of the wetlands.

Future Drainage Problems

Due to the rise in sea level, drainage of interior runoff from rainfall and snow melt would continue to cause street and basement flooding problems. This would necessitate improved drainage systems, water storage or ponding areas to store runoff until tides recede, and in some places pumping stations, as being designed for the Town Line Brook by the MDC.

Future Estuary Flushing and River Currents

With sea level rise the natural volume of water flushing in and out of the estuary could change as shown in Table 13. The mean tide occurs 50 percent of the time, while the maximum astronomic tide is less than 0.1 percent.

Higher currents could aggravate the existing navigation problems with eddies at the General Edwards Bridge, or create erosion to pier footings.

Table 13
CHANGE IN TIDAL PRISM

Scenario	Sea Level Rise (feet)	Percent Change in Tidal Prism Using Existing Capacity (mean tide/max. astro. tide)	
		Natural Increase	With Floodgate Closure at EL.7.5
Projected Existing Tides	n/a	n/a	L.T. 0.1/L.T. 0.1*
Historic Rise	0.8	9/15	+ 9/- 2
NRC Case I	1.6	22/34	+ 22/- 4
NRC Case II	2.9	46/60	+ 42/- 8
NRC Case III	4.2	100/80	+ 29/-14

*L.T. = Less than 0.1 percent change.

Wetland Changes

The increase levels of mean high tide and higher velocities of flow in the estuary would cause the 115 acres of low salt marsh (EL. 4±) which is currently regularly flooded to turn to mud flats under Cases I, II and III as their frequency of inundation and prolonged inundation and erosion increases. The 955 acres of irregularly flooded high salt marsh located about EL. 5-6, slightly above mean high tide, would gradually become low marsh eventually turning to mud flats as mean high tide approaches EL. 8-9 under Cases II, and III, respectively. These high rates of rise would not provide sufficient time for sedimentation to naturally raise the wetlands.

With Project Condition

The effects of sea level rise whether a continuation of historic trends or the more dramatic scenario described by the NRC Case III will vary between the Options. Each of the Options as mentioned earlier has been formulated considering the historic rate continuing. In all cases an increase of this magnitude would not cause undue stress on the environmental resources associated with the project nor affect significantly the projects economic efficiency. These effects are described in the Feasibility Report, EIS/EIR and supporting appendices.

A sea level increase of the magnitude presented in NRC Case III is quite another matter. An increase of 4 feet over the next 100 years would unquestionably require significant adjustments in either the configuration of the various options or their operations. However, a sea level rise of about 4 feet would require adjustments well beyond the boundaries of the project now under consideration in this report. Indeed in areas not protected by project features as proposed in this report such sea level increases would create havoc along the shore front, and land along coastal inlets and streams causing frequent flooding to large numbers of homes, businesses and industries as well as to the vital infrastructure.

When attempts are made to describe the effects of a sea level rise following the NRC Case III scenario some recognition must be given to the uncertainty of the increase itself and attendant impacts. The severity of the impacts on the project or caused by the project will depend to a large degree on the public policy in existence at the time the impacts are reviewed. That policy, State and/or Federal, will be made in recognition of the threat caused by increases observed to that point and the increased knowledge available as to the true direction of this phenomena. At this time the public response whether protect or retreat cannot be predicted.

Although unclear the actual rate of increase of sea level rise should not affect discussions on the projects at hand. Even under NRC Case III conditions a one foot rise is not forecasted until 35 years after the estimated completion date of the project. As mentioned earlier each of the Options whether Option 1 - Local Protection Plan; Option 2 - Non-Structural Plan or Option 3 - Regional Floodgate Plan has been formulated with a 1 foot rise in mind. The main report also summarizes potential changes and costs to modify the Regional Plan so that the affects of the floodgates vary between natural tides and a limited one foot rise. Further, the project would be designed to facilitate modifications for Case 3 sea level rise, if modifications become necessary.

To insure the economic efficiency of the project using the accelerated rise rate in NRC Case III, the Regional Project was subjected to an analysis using a 35 year investment return period. The results of this analysis are shown in the following table. As illustrated, Option 3 remains a strong economic candidate.

Table 14
REGIONAL PROJECT ECONOMIC FEASIBILITY WITH SEA LEVEL RISE
(1988 Price Level)

	Option 3 Historical Rate	NRC Case 3
Project Evaluation Period	50 years	35 years
Average Annual Cost ($K)	$ 8,700	$ 9,040
Average Annual Benefits ($K)	$10,624	$11,980
Net Benefits ($K)	$ 1,924	$ 2,940
Benefit-to-Cost Ratio	1.2 to 1	1.3 to 1

In summary the subject of sea level rise and its implications on society will be with us for some time. At this time various widely divergent potential sea level rise scenarios are emanating from many sources. Uncertainty as expressed in the divergence could act to paralyze decision making since clearly all information on all effects for all scenarios is not available.

The approach in this response therefore has not been to develop all information for all scenarios but rather a test the sensitivity of the decision to proceed with the selected project. Since the analysis shown in the report and appendices did not reveal significant impacts from an historical sea level rise of 1 foot the timing of such a rise under NRC Case III provides a duration for evaluating the present project proposals under several future sea level scenarios. As discussed and shown in Table 14 a project amortization period limited to as little as 35 years continues to provide an economically efficient project.

At the time a 1 foot rise is approached much more information will be available on actual trends and decisions can be made then as to the appropriate future action i.e., protect or retreat. Any of the options described in the report are compatible with either future policy decisions.

PUBLIC COMMENTS AND CORPS RESPONSES TO PUBLIC AND AGENCY REVIEW OF DRAFT FEASIBILITY REPORT AND EIS/EIR

SAUGUS RIVER AND TRIBUTARIES
FLOOD DAMAGE REDUCTION STUDY
LYNN, MALDEN, REVERE AND SAUGUS, MA

COMMENTS AND RESPONSES

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NICHOLAS MAVROULES
6TH DISTRICT, MASSACHUSETTS

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July 10, 1989

Colonel Daniel M. Wilson, Division Engineer
U. S. Army Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Colonel Wilson:

I take this opportunity to write regarding the Saugus River and Tributaries Flood Damage Reduction Study. Upon review of the proposed Regional Floodgate Plan, calling for floodgates to be constructed at the mouth of the Saugus River, I feel that this plan would provide the highest level of coastal flood protection for the areas of Saugus, Lynn, Malden and Revere.

The Regional Floodgate Plan recommended by the Army Corps, providing protection for thousand of homes and commercial buildings, recreation on park land, a safe port of refuge for boats, and most importantly, preventing any significant impact on the saltwater estuary or on navigation, in my opinion, projects a sound plan with high economic benefits and preservation of valuable environmental resources.

I would like to express my continued support for the good work provided by the Army Corps, New England Division. Over the years, the Corps has offered invaluable services to the communities of the 6th Congressional District. I look forward to working with you in the future. Please convey my compliments to Project Manager, Robert Hunt for a job well done.

If I may be of further assistance, please do not hesitate to contact Virginia DeRosa at my Lynn District Office. Once again, thank you for your past courtesies, I remain,

Sincerely Yours,

Nicholas Mavroules
Member of Congress
140 Union Street
Salem, MA. 01970

NM/vdr

A1

EDWARD J. MARKEY
7TH DISTRICT, MASSACHUSETTS

COMMITTEES
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CHAIRMAN
SUBCOMMITTEE ON
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August 25, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

RE: The Regional Floodgate Plan of the
Saugus River Flood Damage Reduction Study

Dear Colonel Wilson:

I am writing to you to support the U.S. Army Corps of Engineers flood damage reduction study to solve the coastal flooding problems in the Saugus River and Tributaries. I have reviewed the comments of the residents and city officials and have concluded that of the three potential solutions developed, the Regional Floodgate Plan offers the highest level of protection with the least amount of envionmental impacts for the residents of Revere, Malden, Saugus and Lynn.

The Regional Floodgate Plan would minimize the amount of extensive damage caused to communities by major storms such as the Blizzard of 1978. This plan would address growing public concern over the further damage and loss of wetlands, and threats to water quality. The development of the Regional Floodgate Plan is reasonable and vital to the safety of the residents of these communities and to our environment.

Also, I appreciate the extensive studies completed by the Army Corps of Engineers during the lengthy three year process. Your commitment to an open public participation process respected the concerns of the residents and public officials. I trust that the Army Corps will continue to maintain an outreach to the residents of the Point of Pines, Revere, during the construction process to ease the burden of traffic, construction and maintenance in this highly populated area.

I would like to thank you in advance for every consideration that you will give this fine proposal.

With best wishes,

Sincerely,

Edward J. Markey A2

EDWARD J. MARKEY
Member of Congress

The Commonwealth of Massachusetts
House of Representatives
Committee on Ways and Means
STATE HOUSE, BOSTON 02133

WILLIAM G. REINSTEIN
17TH SUFFOLK DISTRICT
61 SWEENEY AVENUE
REVERE, MA 02151

Committee on
Ways and Means
ROOM 237
TEL. 722-2380

August 7, 1989

Colonel Daniel M. Wilson
U.S. Army Engineer Division
424 Trapelo Road
Waltham MA. 02254

Dear Colonel Wilson:

As a public official I urge you to support recomendations from the Oak Island Resident Assc., and others who are deeply concerned with both flood protection and what effect floodgate construction could have on the estuary. Obviously the actions of your agency will effect human, animal and plant life for generations to come. I strongly support the project but request that you proceed with the above in mind. As a competent professional I know you will take every step necessary to protect the environment.

Sincerely,

William G. Reinstein

WILLIAM G. REINSTEIN
State Representative

WGR/pas

B

FEDERAL HIGHWAY ADMINISTRATION
REGION ONE

55 Broadway -10th- Floor
Cambridge, MA 02142

IN REPLY REFER TO:

June 26, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S.Armey Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Colonel Wilson:

We have no particular comments to offer in regard to your Draft Report concerning "Flood Damage Reduction" for the Saugus River and tributaries. However, the old "I-95 embankment" is owned by the Massachusetts Department of Public Works and at one time the DPW had plans to construct a "Revere Beach Connector" highway which also might be impacted by your "proposed clam flat mitigation area." You should contact the MDPW directly in this regard, if you have not already done so. 1.

Sincerely yours,

James A. Walsh
Division Administrator

by: C. L. Dunkley
District Engineer

C

United States Department of Agriculture

Soil Conservation Service

451 West Street
Amherst, MA 01002
Tel. (413) 256-0441

July 11, 1989

Colonel Daniel M. Wilson
Division Engineer
U.S. Army Engineer Division,
New England
424 Trapelo Road
Waltham, MA 02254-9149

Re: Feasibility Report and Draft Environmental Impact Statement/ Review, Saugus River and Tributaries, Lynn, Malden, Revere and Saugus, MA, June 1989 Review.

Dear Colonel Wilson:

We have completed our review of these draft documents. The proposal is a significant flood protection program for this vulnerable coastal urban area.

We have no comments to make at this time, but feel we should notify you that we have reviewed the draft documents.

Thank you for the opportunity to review this proposal.

Sincerely,

REX O. TRACY
State Conservationist

cc:
Mark DeBrock, Taunton, MA
Charles R. Terrell, Environmental Specialist, SCS, NEQ
David Shepardson, EOEA/MEPA Unit, Boston, MA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
400 RALPH PILL MARKETPLACE
22 BRIDGE STREET
CONCORD, NEW HAMPSHIRE 03301-4901

Colonel Stanley J. Murphy
District Engineer
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254

July 21, 1989

Dear Colonel Murphy:

We have completed our review of the Draft Feasibility Report and Draft Environmental Impact Statement (DEIS) for the Saugus River and Tributaries Flood Damage and Reduction Study. The following comments, provided under the authority of the Fish and Wildlife Coordination Act (FWCA) 16 U.S.C. 661 et seq., reflect the views of the Fish and Wildlife Service on the proposed flood control project. These comments supplement our FWCA report dated May 4, 1989. They address several points raised in your responses to our report, as well as issues not covered in our previous comments.

General Comments

We previously commented on the preliminary Draft Feasibility Report and DEIS in our May 4, 1989, report submitted to the New England Division pursuant to Section 2(b) of the FWCA. Our report, along with the Corps' response, is included in Appendix I, Planning Correspondence, of the DEIS. We appreciate the Division's efforts to respond in detail to our comments. We also appreciate the additional information clarifying certain issues, e.g. the role of the National Flood Insurance Program in the nonstructural protection plan. It does not appear that substantive changes in the proposed project design or mitigation plans have been made in response to our comments and recommendations. The issues and concerns raised in our May 4, 1989, FWCA report are, for the most part, still appropriate.

The DEIS and associated appendices generally provide a thorough discussion of affected resources within the project area and expected environmental impacts of the various project features. Major unresolved issues are identified. Some of the findings in the DEIS regarding project impacts are not adequately reflected in the Feasibility Report, where it is stated there are no known significant adverse environmental impacts and that the project enjoys wide public support (p. viii, 112). As pointed out in our previous comments, the proposed project could have significant adverse impacts on fish and wildlife resources of National concern, including migratory birds and fish. Floodplain development, wetland protection, intertidal habitat filling, fish passage, and future estuarine flushing impacts are among our concerns with the project. Similar concerns have been expressed by state and federal resource agencies and public interest groups.

E.

Specific Concerns

Floodplain Development

As we have commented previously, we do not consider the project to be consistent with current federal policies and philosophy that discourage federal support for new development in estuaries, floodplains, coastal barriers, and wetlands. The Corps disagrees, citing studies that show floodplain development will occur regardless of whether the project is built. Increased vulnerability of the study area to coastal flooding in the future is predicted as a result of continued growth and intensified residential, commercial, and industrial development within the floodplain (p. 27, EIS-66,88). Project benefits are taken for protection of structures expected to be built within the floodplain in the future (page 98,99). Regardless of the level of development attributable to the flood protection benefits of the project, the project would constitute federal support for development that is, and will be undertaken with full knowledge of the risk associated with building in the coastal floodplain. Policy and decision makers will have to determine if protection of such development is consistent with current public policies and regulations. 1

Wetland Losses

We regret that our 2(b) report contained an error in the discussion of past wetland loss trends in the study area. The figures we cited from the Corps Enforcement Unit's "Final Report of Investigation: Unauthorized Work in Saugus, Lynn, and Revere Marsh" (January 25, 1989), should have indicated that of the wetland area filled over the last 20 years (not 10), less than half (i.e. 36%) was unauthorized. The point we wanted to make was that the Section 404 regulations regulate, but do not necessarily prohibit, wetland filling. The investigation found that five of the wetland fills within the estuary were authorized by the Corps. 2

As indicated previously, we believe the rate of wetland loss within the study area may increase in the future as a result of induced development. Wetland losses would not necessarily be prevented by the proposed estuary storage protection program which relies on enforcement of existing regulations. The goal of this program is to protect storage volume for interior runoff. Wetland filling could be allowed as long as compensatory storage volume is provided (p. B-107). 3

Given the current national no net wetland loss policy, it is probably unrealistic to assume that without project conditions include up to 290 acres of wetland impact from large-scale transportation projects as noted in the DEIS (p. EIS-37, 43, 60, 75). However, in the event that such large-scale projects were to gain political support in the future, our past experience has shown that Section 404 regulations are often ineffective in preventing wetland fills associated with highway development. On page EIS-90, it is noted that the Massachusetts Wetland Protection Act would not necessarily preclude wetland filling for transportation projects. Unless more definitive wetland protection measures are adopted, we cannot concur with the Corps' conclusion that no vegetated wetlands within the study area would be lost in the future if the regional flood control project were developed (p. EIS-37). 4

Compliance with Clean Water Act Regulations

In our continuing discussions regarding the applicability of the Clean Water Act regulations to civil works projects, we have pointed out that Corps' planning policies that require selection of the "lowest cost alternative" can 5

E

CORPS RESPONSE

Reply Letter Number

A. 1. No Response Required

A. 2. No Response Required

B. See Responses to Comments from Oak Island Resident Association (Response "W")

C. 1. See General Response # 1. The Corps will work with the MDPW during the design of the project.

D. No Response Required

E. 1. Induced development was identified as a potential major impact at the beginning of the study and an independent consultant was hired by the Corps to study this issue. Results of that study indicate that the project would not exhibit a significant impact on development due to the existing regulatory protection of the wetlands, which would not change, and to marginal costs savings expected to accrue to new construction in areas adjacent to the wetlands, particularly the avoidance of flood-proofing costs. It was found that development decisions in the study; study area were far more sensitive to factors such as interest rates, demand and supply for housing, location factors such as nearness to transportation facilities and water, etc. There is very little undeveloped land left in the study area and typical of most highly developed urban areas more intensive development is simply taking place largely at the expense of existing less intensive developments. No major land use changes are occurring or are foreseen with a project. The EIS defines the compliance of this action with all pertinent environmental laws, regulations and executive orders. Also See General Response #1. Future development benefits have only been taken for about 5 projects currently being planned or nearing construction.

E. 2 Future wetland development will undergo evaluation by all existing statutes including the recently enacted designation of the system as an Area of Critical Environmental Concern. Additionally the local sponsor will be required to assure the flood storage volume of the estuary be preserved by obtaining a real estate interest.

E. 3. The acquisition of a real estate interest provides the surest and soundest way to control the capacity in the estuary.

E. 4. The Corps recognizes the worst case potential of "highway" development types of fill being permitted under Section 404 reviews. The practical alternatives will be fully evaluated for the public benefit of the highway projects on their own merits. In addition a real estate interest will be acquired to protect the storage capacity in the estuary.

be inconsistent with the Section 404(b)(1) Guidelines that prohibit the deposition of fill in wetlands and special aquatic sites if there are alternatives that would have less impact on the aquatic environment. The Division responded that it is not Corps' policy to develop the least cost alternative (response 12(a)). This comment is not supported by statements in the DEIS and other Corps' responses to our report. The Corps' policy to recommend the "lowest cost alternative" is specifically mentioned on page EIS-7. In response 11(c), regarding the selection of dikes over less environmentally damaging alternatives, it is noted that the "...choice of lowest cost alternatives is consistent with Federal Policies, in particular the Water Resources Council's Principles and Guidelines." As we have previously pointed out, the Principles and Guidelines are advisory only as they are not rules that carry the full force of law as do the 404(b)(1) Guidelines. The Guidelines are enforceable regulations that apply to both the Corps' Section 404 regulatory program and the civil works program (Guidelines at 230.2(a)(2), Corps RGL #88-9, dated July 21, 1989). The Corps' position that there are no overriding reasons to recommend other alternatives implies that the requirements of the Clean Water Act and FWCA have not been fully considered. 5.

We are unable to support the conclusions of the Section 404(b)(1) Evaluation included in the DEIS. The discharge of fill at Lynn Harbor does not represent the least damaging practicable alternative. The shoreline protection structure does not have to be located in the aquatic ecosystem to fulfill the purpose of excluding flood waters (i.e., a dike or wall can function equally well on uplands). The discharge would not be in compliance with state water quality standards as there would be a loss of existing beneficial uses (fish and wildlife habitat) which would violate the "anti-degradation" provision of the Massachusetts Surface Water Quality Standards (314 CMR 4.04). Similarly, the project would contribute to significant degradation of waters of the United States as it would adversely affect the aquatic ecosystem. Finally, there are appropriate and practicable steps that could be taken to minimize adverse impacts to the aquatic ecosystem (e.g. construct dikes on uplands). 6.

North American Waterfowl Management Plan

Our concern over the loss of intertidal habitat in Lynn Harbor is based in part on its value to migratory waterfowl. In Response 11(a), the Division agrees that it is important to protect areas rich in shellfish habitat and feeding grounds for waterfowl. However, it is implied that the area affected by the project does not warrant protection because it does not support "high" soft-shelled clam numbers nor is it "...the most important feeding grounds for waterfowl." 7.

We would appreciate further clarification of the Division's contention that the impact area within Lynn Harbor is not amongst the areas favored by waterfowl, including black duck (Response 15). As noted in Appendix K, Lynn Harbor is utilized not only by black duck, but by a variety of other waterfowl species, including: bufflehead, red-breasted merganser, Canada goose, common eider, brant, and common goldeneye (p. K-74). The impact area in Lynn Harbor is within the Greater Boston Focus Area, a priority waterfowl management unit designated by the Atlantic Coast Venture under the North American Waterfowl Management Plan (NAWMP). Attainment of NAWMP goals, including habitat conservation, is one of the highest priorities of the Fish and Wildlife Service. President Bush has endorsed the NAWMP as part of his "no net loss" national wetland protection policy. A Cooperative Agreement has been instituted between the Department of the Interior and Department of the Army 8.

E

CORPS RESPONSE

E. 5. The selection of the least cost alternative is referring to the mitigation plans and the incremental analysis of those options that fulfill the mitigation goal for compensation. The Floodgate (Option 3) was selected based on its maximizing National Economic Development (the NED plan) by providing the highest net benefits while fulfilling the flood protection goals. Once this plan was selected, those significant impacts requiring mitigation were identified and a 1 to 1 ratio of compensation was stated (Appendix K - mitigation) as the mitigation goal. The least cost alternative that compensated for these impacts was selected (clam flat construction) because it was practical. As defined in the 404 guidelines (40 CFR 230 10(a) 2) "An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes". The Corps did not find the expenditure of $4.5 million to avoid the Lynn Harbor clam flats practicable at that time when adequate mitigation by clam flat construction from disturbed upland fill could be accomplished for about 5% of that cost. However, the impact has been eliminated. See General Response #3.

E. 6 Recently (post DEIS) real estate evaluations have described a future without project condition of the land use along Lynn Harbor as being different than previously evaluated (See General Response #3). The lowered real estate appraisal values of this property have made a project change possible that allows the upland construction of the Lynn Harbor walls and dikes as the most practicable (least costly) project scenario. Therefore the clam flat and intertidal mitigation for the project impacts will only be necessary for the floodgate footprint, Point of Pines revetments, and a small part (0.1 Ac) for Lynn Harbor walls, totalling 3 acres. The project is still in 404(b)1 compliance as stated.

E. 7. Benthic sampling along Lynn Harbor described a patchy distribution of shellfish. The most important waterfowl forage area was identified as an 0.8 acre isolated mussel (Mytilus edulis) bar. The project dredging footprint was realigned to avoid this habitat because it was identified as the most important waterfowl feeding area. The impact in Lynn Harbor has been nearly eliminated.

E. 8. Prior to the recent project design change that moved dike construction upland along Lynn Harbor, the Corps' biological surveys identified the intertidal flats on this side of the harbor, including the mussel bar, as significant habitat. This level of significance was endorsed by the need for mitigation. This mitigation fulfilled the intent of all "Cooperative Agreements or other national conservation policies".

E. 9. The Ecological/Quality (EQ resources) value of intertidal habitat is fully recognized in the incremental mitigation analysis. If only the economic (NED resources) value of the clams were recognized, the project would simply discount the regional project benefits by the minor economic value of the clams and therefore not require any mitigation. The impact in Lynn Harbor has been nearly eliminated.

to insure fulfillment of NAWMP goals within the context of civil works project planning. The Division's failure to avoid direct project impacts to this priority habitat area is not in keeping with the provisions of the Cooperative Agreement or other national conservation policies. 8

With respect to invertebrate foods for waterfowl, the DEIS indicates that the tide flats affected by the project support significant shellfish resources. Intertidal areas impacted by the project sustain "...significant concentrations of recreationally and commercially valuable shellfish..." that are considered significant ecological and National Economic Development resources (p. EIS-33, 61). On page EIS-34, it is noted that the Sea Plane Basin, adjacent to the proposed mitigation site, contains about the same density of clams as the impacted areas, about 50 clams/square meter. The Seaplane Basin is considered "highly productive" (p. 83), and "optimum clam habitat" (p. EIS-34). Therefore, the impacted areas, having the same density of clams as the Sea Plane Basin, should also be considered highly productive, optimal clam habitat. Also, the ecological value of the affected habitat should not be based solely on the density of soft-shelled clams. The intertidal flats support a variety of other marine invertebrates that contribute to the food chain. 9

Conflicting information is presented regarding project impacts on blue mussel beds in Lynn Harbor that are an important food source for waterfowl. Response 16 indicates that dredging for the project has been modified to avoid impacting an important mussel bed in Lynn Harbor. On page EIS-112, however, it is noted that the area to be dredged includes a large (0.8 acre) mussel bed. We would appreciate additional clarification on this issue.

Future Project Impacts

In Response 22, regarding future project-related impacts to the estuary associated with rising sea level the Corps implies that significant impacts are highly unlikely since there is no scientific data to support the referenced projections of accelerated sea level rise. Our comments, however, were based on information in the DEIS indicating that: increased rates of sea level rise have been predicted by the scientific community and; the ecology of the Saugus and Pines River estuary would be adversely affected by future project operation in conjunction with rising sea level. The Corps undoubtedly endorses the concept of level rise, as flood damages in the study area are predicted to increase in the future as a result of rising sea level (p. 19, 28, 30). Substantial project benefits are claimed for protection from increased flood damages associated with sea level rise (p. 37, 57, 63, 95, 97, 99). The potential for accelerated sea level rise is referenced in the Feasibility Report (p. 15, 59, 78, 111) and in the DEIS (p. EIS-21, 141). As noted on page 141 of the EIS, "[t]he scientific community appears in general agreement that the rate of global sea level rise will increase..." and "[a] middle estimate of 3 to 4 feet is accepted by many experts." The DEIS notes that predicted increases in sea level rise are as high as 7 feet, while the EPA, in its July 1988 publication "Greenhouse Effect, Sea Level Rise and Coastal Wetlands," estimates that sea level rise over the next 100 years could be as high as 9 feet. 10

Our point is that while sea level rise is recognized by the Corps as an important factor that further justifies the need for flood protection, the Feasibility Report dismisses as insignificant project-related impacts to the estuary that could occur under the same changing sea level conditions (p. 112). Statements in the DEIS (p. EIS-6) regarding the lack of project impacts 11

E.

CORPS RESPONSE

E. 10. The Corps nationally will be taking a leading role in determining practical responses to sea level rise. The purpose of this report is not to define the local rate of sea level rise, but simply to recognize it and design the project with a potential for future modifications in response to the actual rate. The Main Report describes modifications to avoid frequent operations and associated impacts. Project benefits are only taken for the historical rate of rise (one foot in 100 years).

E. 11. The future without project conditions considering sea level rise will most likely require a regional (i.e., New England-wide) response that is beyond the scope of this document. The interaction of this project with respect to realization of 40 through 100 project-year levels is discussed in the context that the potential exists for continued project operation with modification scenarios (preferably local upland berms) given. Removal or breaching of the I-95 fill is not practical since it would increase local flooding. Future regional responses and the effects of sea level rise itself on estuarine flushing and water quality not significantly affected by the project will not be mitigated under this project. (See also the revised paragraph 8.38 on page 151 in the EIS/EIR.) Walls or dikes on upland around the estuary would occur with or without the project to keep pace with sea level rise. Also see Sea Level Rise discussions in the main report and General Response #4.

E. 12. The "500 foot" zone is a typographical error. A 500 meter increase in turbidity would be expected and is based on the citation given. This typographical change does not affect the impact predictions.

E. 13. Given the recent project changes constructing Lynn Harbor structures upland, acquisition of the estuary storage area (thus preventing future wetland losses that might occur without the project), and lack of significant long-term impacts that are not mitigable, the Final Report weighs the project benefits as acceptable for implementation.

E. 14. The nonstructural option (Option 2) does not fulfill the project intent and Corps policies in this case for selection as the flood protection alternative. A total non-structural plan was evaluated. See General Response #2.

to estuarine dynamics do not take into account potential impacts described elsewhere in the DEIS (p. EIS-149 to 152). The maximum rate of sea level rise would not have to occur before the project would begin to affect the estuary. The projected increase in gate closures associated with the historical rate of sea level rise (35-40 closures/year) could cause a change in plant species composition in the high salt marsh from reduced frequency of inundation (p. EIS-151). In addition to the adverse effects of increasing gate closure frequency and duration, a whole new set of impacts could surface if dikes and walls are required around the perimeter of the estuary (in addition to the flood gate structure) to prevent flood damage from sea level rise (p. EIS-152). Since the primary effect of the project would be on estuary flushing and water quality, we believe that a large-scale estuary mitigation effort is justified. It is within this context that we have recommended restoration of estuarine flushing within the upper reaches of the marsh through removal or breaching of the I-95 fill embankment. 11

Our final comments pertain to a statement in the DEIS regarding the effect of dredging on suspended sediment levels in the water column (p. EIS-112). The assumption that suspended sediment levels would return to background levels within 500 feet of the dredging activity does not concur with the range of dredging sediment plumes reported in the Corps Waterways Experiment Station's April 1989, publication "Field Studies of Sediment Resuspension Characteristics of Selected Dredges" (HL-89-9). In this report, sediment suspension is reported as a function of dredge type rather than sediment particle size. The shortest reported sediment plume, 950 feet, was reported for a dustpan dredge. Sediment plumes associated with dredging equipment more commonly used in this area ranged from 2000 feet for a cutterhead hydraulic dredge to over 7000 feet for a hopper dredge. We would appreciate additional information, if available, documenting the 500-foot sediment impact zone described in the DEIS. 12

Summary

In summary, we are unable to support the preferred alternative of a floodgate and associated shoreline protection because of unacceptable local impacts from structural features of the project, as well as the potential for long-term impacts to the ecology of the Saugus-Pines River estuary. Although we have recommended measures to avoid or otherwise mitigate impacts from the Lynn Harbor dikes and the floodgate itself, we do not see any way to avoid long-term estuary impacts from tidal changes associated with project operation. While project-induced tidal changes may not be significant at the present time, future changes in environmental or social/political conditions could result in significant fish and wildlife impacts from increased frequency and duration of floodgate closures. 13

E.

We support the use of non-structural solutions to reduce flood damages in the study area since they would not adversely impact fish and wildlife resources nor would they have the wide-ranging ecological implications of the regional floodgate alternative. We encourage the Corps to further investigate the potential for non-structural flood control solutions, perhaps in combination with scaled-down or otherwise modified structural features that would not impact the important fish and wildlife resources of the project area. 14

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor
New England Area

E.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
Atlanta GA 30333

August 3, 1989

Joseph L. Ignazio
Chief, Planning Division
New England Division
U.S. Army Engineer Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Sir:

We have reviewed the Feasilbility Report and Draft Environmental Impact Statement (DEIS) for "Flood Damage Reduction-Saugus River and Tributaries, Lynn, Malden, Revere and Saugus Massachusetts." We are responding on behalf of the U.S. Public Health Service. We have reviewed the document for potential impacts on public safety health. We concur that the proposed flood protection will greatly reduce the risks to life, health, and safety faced by residents and businesses in the project area. We also agree that the Regional Saugus River Floodgate Plan which creates a linked defense line to provide Standard Project Northeaster (SPN) event protection to nearly the entire study area is the most feasible (and most economical) alternative for this flood control project.

With regard to impacts on public safety and health, we were concerned that studies of waters in the project area found a number of heavy metals which exceed EPA's chronic criteria to protect sensitive marine aquatic life. Of course, introduction of heavy metals into the food chain represents a potential health hazard to human populations and we recommend any feasible mitigation to reduce this contamination to the lowest possible level.

Thank you for sending this document for our review. Please insure that we are included on your mailing list for the Final Environmental Impact Statement as well as further documents which are developed under the National Environmental Policy Act (NEPA).

Sincerely yours,

David E. Clapp, Ph.D.,P.E.,CIH
Environmental Health Scientist
Center for Environmental Health
and Injury Control

F

CORPS RESPONSE

F. 1. The existence of elevated metal levels in the estuary is not anticipated to be exacerbated by project implementation. Feasible mitigation to reduce contamination is source reduction and is beyond the scope of this project to investigate.

G. 1. See response to E.14.

G. 2. The mitigation goal for this project, as stated in the incremental analysis, was also to allow no net loss by providing a 1:1 compensation ratio of habitat value (acre). See also General Response # 3 and #4.

G. 3. These are the project impacts that were evaluated during the EIS development and weighed against project benefits. See also General Response #1.

G. 4. See response to E 8.

G. 5. See General Response #3 and E6 and 40 CFR 230.10 definition of practicable quoted in E5.

G. 6. Gate openings will be curved to reduce shear stresses. The gate openings will be from flush with the substrate to EL. 0 NVGD or higher. The navigation gate will continuously allow free passage.

G. 7. See General Response #1. Any permitted filling would require compensatory storage.

G. 8. See Response E 11.

G. 9. See Response E 13.

G. 10. See Response E 14.

United States Department of the Interior

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
BOSTON FEDERAL OFFICE BUILDING
ROOM 1022
10 CAUSEWAY STREET
BOSTON, MASSACHUSETTS 02222—1035

August 4, 1989

REF: ER 89/538

Colonel Daniel M. Wilson
Division Engineer
U.S. Army Engineer Division, New England Division
424 Trapelo Road
Waltham, Mass 02254-9149

Dear Colonel Wilson:

This responds to your June 16, 1989, notice regarding the Water Resources Investigation-Saugus River and Tributaries Flood Damage and Reduction Study, Lynn, Malden, Revere, and Saugus, Massachusetts. The Department of the Interior has reviewed the Draft Feasibility Report and Draft Environmental Impact Statement (DEIS) and offers the following comments for your consideration.

General Comments

The DEIS and associated appendices generally provide a thorough discussion of the biological resources of the project area and expected environmental impacts from alternatives considered. An evaluation of project impacts and mitigation recommendations was presented in the May 4, 1989, Final Fish and Wildlife Coordination Act Report prepared by the Fish and Wildlife Service for this project (included in Appendix I, Planning Correspondence). Fish and wildlife issues raised in the FWCA Report have not been resolved to the Department's satisfaction. These include: impacts to migratory birds, fish and benthic invertebrates from intertidal habitat losses within Lynn Harbor; possible fish passage impacts from flow constriction at the proposed floodgate structure; secondary impacts to wetlands and floodplains from induced development; and impacts to water chemistry and other environmental parameters within the estuary from operational changes associated with future sea level rise.

Because the proposed project would cause significant adverse impacts to fish and wildlife resources of national interest, we do not support the preferred alternative of a floodgate and structural shorefront protection structures. Of the three alternatives presented in the Feasibility Report and DEIS, we support only Option 2, the non-structural alternative. It is the only alternative that would not impact fish and wildlife resources.

Specific Comments

Fish and Wildlife Resources

Approximately 40 percent of the study area consists of the Saugus and Pines River estuary, which at 1,660 acres, is the largest estuary near Boston. The estuary and its environs support significant populations of fish and wildlife

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resources including: marine and anadromous fish, shellfish and other invertebrates, and migratory birds, including waterfowl. The Saugus and Pines River salt marshes and the tide flats of Lynn Harbor have been designated a special management area under the North American Waterfowl Management Plan because of the high value of the area to wintering waterfowl and the eminent threat of habitat destruction. We consider the saltmarsh and intertidal habitat potentially affected by this project to be of high value for migratory birds and both marine and anadromous fish. This habitat type is becoming scarce along the New England coast. Our mitigation goal is to allow no net loss of existing habitat value. 2

Overall, the proposed project would permanently impact 11 acres of intertidal and 3.8 acres of subtidal habitat. Another 5.9 acres of intertidal habitat would be impacted during construction and 4.5 acres of subtidal habitat would be dredged. The area within the regulated 100-year floodplain would be reduced, since the project would result in lowering of 100-year flood elevations, in some places by over 5 feet. 3

Approximately 5.6 acres of productive tide flats within Lynn Harbor would be eliminated from the construction of dikes. The affected habitat supports significant concentrations of recreationally and commercially valuable shellfish resources. The site provides low tide feeding habitat for black duck and wintering habitat for other waterfowl, including diving and sea ducks. In recognizing the value of the area for waterfowl, the Atlantic Coast Joint Venture included it in the Greater Boston Focus Area, a special management designation under the North American Waterfowl Management Plan (NAWMP). The NAWMP specifically calls for the protection and enhancement of migration and wintering habitat for black duck along the eastern coast of the United States. Attainment of NAWMP goals, including habitat conservation, is one of the highest priorities of the Department. 4

We recommend that the Corps adopt less damaging alternatives such as walls or dikes set back from the waters edge to avoid impacts to productive intertidal habitat in Lynn Harbor. Habitat compensation is unacceptable in this case as the impact is clearly avoidable. The Corps' proposal to place fill in a "special aquatic site", i.e. mudflats in Lynn Harbor, when less damaging practicable alternatives are available, does not comply with the Clean Water Act regulations, specifically the Section 404(b)(1) Guidelines. The Guidelines specifically prohibit the discharge of fill when: there are practicable alternatives that would have less adverse impact on the aquatic environment; the fill would cause or contribute to violations of any state water quality standard; or the fill will cause or contribute to significant degradation of waters of the United States. Less damaging practicable alternatives are available and were identified in the planning process. The loss of fish and wildlife habitat, current beneficial uses of the site, would constitute violation of the anti-degradation provision of the Massachusetts Surface Water Quality Standards (314 MR 4.04). The project would impact resources of state and national significance, e.g. shellfish and migratory birds, which constitutes significant degradation of the aquatic ecosystem. 5

The Saugus River estuary serves as an important spawning, nursery, and feeding area for many marine and anadromous fish species. Eggs and larvae of marine fish are carried from nearshore spawning areas into the estuary by tidal currents. Juvenile and adult life stages of anadromous species pass through the estuary during their migration. The potential for the proposed floodgate to adversely affect fish passage as a result of flow constriction is described 6

in the DEIS. Some design modifications were made in the planning process to improve fish passage, however, the Corps proposes to postpone final resolution of several fish passage issues until the final design phase. Postponing resolution of fish passage issues is cause for concern, since there appear to be opposing considerations that may affect the final design of the floodgate. Fish passage concerns dictate maximum flushing gate openings, however, economic considerations may result in a reduction in flushing gate openings during final design (p. 63, Feasibility Report). We cannot make a final determination on the effect of the proposed floodgate structure on fish passage until there is a definite commitment from the Corps on fish passage considerations (e.g., rounded gate openings, etc.). 6

The present trend of continued wetland losses from incremental filling within the estuary is described in the DEIS. We believe that implementation of a large-scale flood control project may result in increased floodplain development and associated incremental wetland filling because of reduced development costs and removal of the perceived threat of flooding. The proposed estuary storage protection program relies on enforcement of existing regulations to prevent wetland losses that would reduce interior storage capacity for freshwater runoff and tidal overtopping. Since the goal of the program is to maintain adequate storage capacity, wetland filling could be permitted as long as compensatory storage volume is provided (p. B-107). We recommend that more definitive wetland protection measures be pursued, such as acquisition in fee title or flowage easements, to insure there will be no loss of wetlands from induced development. 7

The Corps' study reflects considerable concern for the effects of predicted sea level rise on project design and operation. The DEIS describes the predicted effects of rising sea level on project operation and the resultant impacts the estuary. Among the impacts attributable to project operation with higher sea levels are: reduction in marsh sedimentation rates resulting in a decreased ability of the marsh to keep up with sea level rise; changes in vegetative composition of the marsh from reduced frequency of tidal inundation; and impacts to water quality from increased storage of pollutants and thermal discharges and reduced dissolved oxygen and salinity levels. Due to the uncertainty of future rates of sea level rise, mitigation for these impacts has not been proposed by the Corps. We believe that mitigation for anticipated estuarine impacts is warranted and should be included in the final EIS. Since the primary effect of floodgate operation would be on estuary flushing and water quality, breaching or removal of the Interstate-95 fill embankment to restore tidal flushing to the upper marsh may provide a suitable starting point for mitigation planning. 8

Summary

The study area includes the Saugus and Pines River estuary, a 1,660-acre complex of salt marsh and tide flats that supports significant populations of migratory birds, marine and anadromous fish, shellfish and marine invertebrates, and other important wildlife resources. The proposed alternative of a floodgate and associated shorefront protection structures would cause significant adverse impacts to these important fish and wildlife resources. Specific project impacts are described in the Fish and Wildlife Service's final FWCA report on the project dated May 4, 1989, and supplemental FWCA comments dated July 21, 1989.

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The Department is unable to support the Corps' preferred alternative because of unacceptable impacts from structural features of the project, as well as the potential for long-term impacts to the ecology of the Saugus and Pines River estuary. Although measures to avoid or otherwise mitigate impacts from the Lynn Harbor dikes and the floodgate have been recommended, those recommendations have not been fully incorporated into the project design. Project-induced changes in the ecology of the estuary, particularly vegetation and water chemistry impacts, may not be significant under existing conditions, however, future changes in environmental or social/political conditions could result in significant fish and wildlife impacts from increased frequency and duration of floodgate closures or additional flood control structures. The magnitude of these impacts has been described in general terms, however, future environmental impacts of the project cannot be sufficiently quantified to develop specific mitigation measures. 9

We support the use of non-structural solutions to reduce flood damages in the study area since they would not adversely impact fish and wildlife resources nor would they have the wide-ranging ecological implications of the proposed floodgate alternative. We encourage the Corps to further investigate the potential for non-structural flood control solutions, perhaps in combination with scaled-down or otherwise modified structural features that would not impact the important fish and wildlife resources of the project area. 10

Sincerely yours,

William Patterson

William Patterson
Regional Environmental Officer

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

August 14, 1989

Colonel Daniel M. Wilson
Division Engineer
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

RE: D-COE-B36065-MA

Dear Colonel Wilson:

In accordance with Section 309 of the Clean Air Act, Section 404 of the Clean Water Act and the National Environmental Policy Act (NEPA), we have reviewed the Draft Environmental Impact Statement (EIS) for the Saugus River and Tributaries Flood Damage Reduction Study, located in Lynn, Malden, Revere and Saugus, Massachusetts.

The Draft EIS evaluates three options for tidal flood damage reduction in the communities of Lynn, Malden, Revere and Saugus. These communities surround a 1,660 acre saltwater estuary at the confluence of the Saugus and Pines Rivers. Option One, Structural Local Protection Plans (LPPs), consists of four LPPs with 8.8 miles of shore-front structures to reduce flood damages. Option Two, Nonstructural Plans, would reduce flood damage through flood preparedness plans and floodproofing of structures. Option Three, The Regional Saugus River Floodgate Plan, consists of a floodgate structure across the mouth of the Saugus River and 3.5 miles of shorefront protection structures along Revere Beach, Point of Pines and Lynn Harbor. The EIS identifies Option Three as the Corps of Engineers' (Corps') preferred option as well as the National Economic Development (NED) Plan. Our comments are as follows:

1. Our Wetland Protection Section has analyzed the Regional Saugus River Floodgate Plan pursuant to EPA's Guidelines under Section 404(b) of the Clean Water Act, and concluded that it does not comply with the Guidelines because the placement of fill on intertidal and subtidal habitat in Lynn Harbor can be avoided. The dike along Lynn Harbor as proposed would result in the loss of 5.6 acres of intertidal habitat, viable habitat that could be preserved by (1) relocating the dike sixty feet upland so that the dike's toe of slope encroaches no further seaward than the existing bulkhead or shoreline toe of slope or (2) constructing walls in place of the dike.

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CORPS RESPONSE

H. 1. See Responses E5 and E6: and General Response #3.

H. 2. See General Response #1. The Hydrology and Hydraulics appendix supplies additional information as referenced in the EIS.

H. 3. Storm drain tide gates must be kept operational to insure flood damages from normal high tides are prevented. The operation of the existing tide gates allow for storage of interior freshwater runoff. If full tide range is allowed to occur upstream of the tide gates, storage for interior freshwater runoff could be significantly reduced, thereby increasing interior flood levels and damages. Also, if local governments chose to install self-regulating tide gates it must be noted that some developed interior areas are below mean high tide level and would be subject to increased flood damage if the self-regulating tide gates malfunction.

H. 4. The existing permit conditions and tide gate structures are accepted as future without project conditions. The impacts described in the EIS are evaluated against these conditions. The future floodgate operations will not alter the "Towle Area" permit conditions.

H. 5. The 404(b)1 Evaluation is included with the DEIS. The EIS explains that the project would have no significant impact on flows, flushing, water quality, fish passage or wetland inundation up to a one foot rise in sea level at which point it could be modified to return to initial operating conditions. See also General Response #4 and responses E.5. and E.6.

H. 6. The wetlands cover maps and design appendices (D&K) delineate these limits. The Corps planning process requires the proposed studies be conducted in the design phase and further studies will not be incorporated into the Final Environmental Impact Statement (FEIS) nor would they change the Record of Decision on the project. The top opening of the gate will be at El.0 NVGD or higher. All dredging impacts have been analyzed to reflect realistic estimates. Final design plans will certainly strive to minimize habitat loss or impacts. The navigation and tainter gate edges would also be curved to reduce impacts. Continued coordination in design would help establish an optimum compromise between the size of each gate (i.e., elevations) and number of gates vs. area dredged.

H. 7. Option 1 is not the selected plan, therefore this impact will not be realized.

H. 8. No response necessary, additional use of the I-95 fill is beyond the scope of this project.

H. 9. The Corps believes the responses offered and project revisions, in particular the inland construction of the Lynn Harbor Dikes, and protection offered by acquisition of a real estate interest in the estuary and the commentors referral to Appendix mapping, will allow the FEIS to rate LO-1. See also Response E. 13.

In support of partially locating dikes in intertidal waters, the EIS states on page EIS-7 that unless there are overriding reasons to recommend another plan the "Corps Planning Regulation" requires that the lowest cost alternative (including mitigation costs) be recommended. The moving of dikes about 60 feet inland or the use of all walls along the river and coastal shorefront alignment is recognized in the EIS (page EIS-18) as greatly reducing intertidal impacts, but was eliminated prematurely in alternatives development. According to the Draft EIS only partial use of dikes in the intertidal zone will be carried into the project design phase. We recommend that you pursue both the alternative dike location and wall construction in the Final EIS for comparative purposes as required by both NEPA and the 404(b)(1) Guidelines' alternative analyses. 1

2. We are concerned that the Saugus and Pines River floodplain, already under development pressure and currently protected only in part, would be subject to increased development pressure if floodplain ordinances or restrictions are lifted. According to the EIS, altogether (excluding vacant land in the marsh) there is a total of about 237 acres of developable vacant land in the Standard Project Northeaster (SPN) floodplain. We recommend that you identify the location of these land parcels which lie between the proposed protected flood level and the current floodplain boundary and which will no longer be subject to floodplain development restrictions. The extent (acreage) of both wetland and floodplain which may be affected by the direct reduction and re-delineation of floodplain and the indirect result of lessened floodwaters must be better documented in the Final EIS. The general statement in the EIS (page EIS-108) that the entire marsh is covered with water at elevation 6.8 NGVD is insufficient and must be substantiated in the EIS. A map showing parcel locations and their relationship to other land parcels, the marsh and existing development would be beneficial in understanding the project's impact. We also recommend that strategies to preserve the wetland and floodplain land as open space, conservation land or buffer zone be developed as part of this project's mitigation plan so that their ecological values in maintaining the estuary are protected. 2

3. We disagree with the Corps' statements in the feasibility report (page 68) and technical appendices (page B-57) that all existing flap gate structures (tidegates) must be kept operational by the appropriate local governments. We believe this is not necessary and would be contrary to any plan to restore degraded wetlands (i.e. Phragmites areas) to salt marsh conditions. The Corps should re-examine whether all tidegates must be kept operational. The Corps should specifically examine the potential to restore salt marsh by removing tidegates or installing self regulating tidegates. EPA is aware of at least three areas where salt marsh restoration could be achieved by this type of measure. These areas include the Saugus area near 3

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Ballard Street mentioned above, the "Ponding Area" in Revere located behind Revere Beach and Route 1A near the Pines River, and the "Towle Area" in Revere. Rather than allow development to occur in these three areas, we would recommend the area be restored to productive salt marsh and the estuary enhanced. This may be accomplished by removing the existing tidegates or replacing them with a self-regulating tidegate. 3

Recently, the town of Saugus removed some unauthorized fill from "the mill pond" located behind the Chabra Shellfish Company. Unfortunately the mill pond area will be affected by the restricted hydrology caused by a tidegate. The pond area will likely vegetate to Phragmites similar to adjacent areas. This is undesirable from both a habitat value and public safety perspective; Phragmites does not support as much wildlife as salt marsh and constitutes a fire hazard to residential areas. An example of salt marsh habitat degraded to a fresh water Phragmites area, which could then be filled and developed under state regulations, is the "Towle Area" in Revere. 4

The "Towle Area" was previously subject to a Corps permit (MA-Lynn-81-181) which had required that a tidegate be maintained in an open position to restore 24.5 acres of Phragmites wetland to salt marsh. Unfortunately, the Corps issued a permit amendment to the original "Leonard Silver Manufacturing Co. Inc." permit which allowed the tidegate to be repaired and made operational. The permit amendment issued on May 25, 1982, deleted all requirements for salt marsh restoration at the "Towle Area". By accepting the Corps' statement and local assurance that all existing tidegates must be maintained operational, we would foreclose the possibility of marsh restoration at the "Towle Area." Restoration of salt marsh, however, remains possible if a self-regulating tidegate is installed.

4. As you know the 404(b)(1) Guidelines also require that the proposed activity not violate applicable water quality standards (Section 230.10(b)) and that it not significantly degrade waters of the United States (Section 230.10(c)). EPA's water quality standards regulations contain an antidegradation policy (40 CFR 131.12) which mandates that existing water uses and the level of water quality necessary to protect existing uses be maintained and protected. Design or operation of the floodgate facility over the life span of the project in such a manner as to impede or block existing fish migration (making existing estuary habitat unreachable), or modifying flows in the Pines River, Saugus River or Diamond Creek so as to prevent bordering wetlands from receiving their current inundation cycle could in our opinion be a violation of Massachusetts' antidegradation provisions at 310 CMR 4.04, mandating that Massachusetts deny the State Water Quality Certification as required by 310 CMR 4.00. 5

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5. EPA supports the Corps' proposal to conduct detailed mapping and delineation of the tidal estuary (with topographic overlays of no less than 2-foot contours) to delineate the wetlands and refine the area's storage/capacity curves. EPA is especially concerned regarding the delineation of upper wetlands subject to infrequent inundation. As you are aware, 955 acres (57.6%) of the estuary, located between mean high water and the highest lunar tides, is irregularly flooded. We request that this delineation and mapping be completed for inclusion in the EIS rather than as the Corps proposes in the design phase. We also support the implementation of the additional studies cited in the feasibility report regarding the design of the flushing tainter gates to reduce the potential impacts of the gate on fish, plankton and lobsters. It may also be desirable to raise the top of the proposed tainter gates beyond elevation 0.0 NGVD. The relationship between the design of the tainter gates and dredging of the intertidal area should be described in the Final EIS. Minimal dredging of intertidal and subtidal habitat is desirable and should be strived for. 6

6. Finally, as you may know, for many years, EPA has had a goal of the removal of the entire Interstate 95 roadway embankment and restoration of the I-95 right-of-way to its original salt marsh condition. Re-establishment of salt marsh can be accomplished if the existing fill is removed and graded to appropriate elevations to accommodate the growth of salt marsh plants. We are concerned that the maintenance of any portions of the I-95 fill as a integral part of a flood damage reduction plan (as would be the case in Option One) would increase pressure for development (residential, commercial, or parkland) in the estuary, and conflict with Massachusetts Department of Public Works' efforts to restore the salt marsh estuary through developing offsite wetland mitigation associated with evolving highway projects. 7

We support the concept of restoring wetlands within the abandoned I-95 right-of-way as project mitigation for <u>unavoidable</u> wetland impacts. The proposed creation of 10 acres of clam flats, fringe marsh area, buffer zone and protective berm through the removal of the I-95 fill adjacent to the Seaplane Basin and creation of a mostly intertidal basin is consistent with our goal. We understand that our goal of restoring the Saugus and Pines River estuary will be further achieved when additional sand from the I-95 embankment is removed for its use in Massachusetts Department of Public Works' roadway projects as well as the Corps' Revere Beach Resanding Project. 8

In conclusion, based on the above comments, we have rated this Draft EIS EO-2 (Environmental Objections -- Insufficient Information) in accordance with our national EIS rating criteria, a copy of which is enclosed. 9

H.4

Thank you for the opportunity to review and comment on the Draft EIS. Please send five (5) copies of the Final EIS when it becomes available. If you have any questions relative to our comments, please contact Donald O. Cooke of this office at (617) 565-3414 or FTS 835-3414.

Sincerely,

Elizabeth Higgins Congram

Elizabeth Higgins Congram, Assistant Director
for Environmental Review
Office of Government Relations and
Environmental Review (RGR-2203)

Enclosure

cc: Joseph L. Horowitz, IAB, COE
Robert G. Hunt, COE
Vern Lang, US FWS
Mike Tehan, US FWS
Ralph Abele, US FWS
Steve Davis, MEPA
Dave Shepardson, MEPA

H.

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
EPA believes that draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

H.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20230

Office of the Chief Scientist

August 7, 1989

Colonel Daniel M. Wilson
U.S. Army Engineer Division, New England
424 Trapelo Road
Walthamn, Massachusetts 02254-9149

Dear Colonel Wilson:

This is in reference to your Draft Environmental Impact Statement on the Flood Damage Reduction, Saugus River and Tributaries, Lynn, Malden, Revere and Saugus, Massachusetts.

We hope our enclosed comments will assist you. Thank you for giving us an opportunity to review the documents.

Sincerely,

David Cottingham

David Cottingham
Director
Ecology and Environmental
Conservation Office

Enclosure

cc: Mr. David Shepardson
EOEA/MEPA Unit

HA.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

JUL 11 1989

MEMORANDUM FOR: David Cottingham
Ecology and Environmental Conservation Office
Office of the Chief Scientist

FROM: Rear Admiral Wesley V. Hull, NOAA
Director, Charting and Geodetic Services

SUBJECT: DEIS 8906.09 - Flood Damage Reduction, Saugus River and Tributaries: Lynn, Malden, Revere, and Saugus, Massachusetts

The subject statement has been reviewed within the areas of Charting and Geodetic Services' (C&GS) responsibility and expertise and in terms of the impact of the proposed actions on C&GS activities and projects.

A preliminary review of C&GS records has indicated that there are no geodetic control survey monuments in the proposed project area. With respect to C&GS' safety of navigation mission, there is no apparent adverse impact on navigation throughout most of the project area except at the mouth of the Saugus River, where the installation of tidal floodgates is planned. Because the overall plan is expected to provide protection from flood damage, C&GS agrees that the recommended plan provides the optimum solution for all concerned.

The construction of the tidal floodgate will adversely affect navigation. In order to keep mariners informed of the hazards created during this period, C&GS requests the cognizant authorities to keep it informed of the construction plans as they are developed and implemented. To ensure proper depiction of this area on nautical charts and to provide proper warnings, C&GS specifically requests copies of the blueprints of the affected area well in advance of the beginning of construction. The project area is covered by NOS charts 13267 and 13275 and all changes resulting from the implementation of the plan will be reflected on these charts.

Additional information concerning the navigational or charting aspects of this response should be directed to the Mapping and Charting Branch, N/CG22x2, WSC1, room 804, Nautical Charting Division, NOAA, Rockville, Maryland 20852, telephone 301-443-8157. For information about geodetic survey monuments in areas adjacent to the proposed project, please contact the National Geodetic Information Branch, N/CG17, Rockwall Bldg., room 20, National Geodetic Survey, NOAA, Rockville, Maryland 20852, telephone 301-443-8631.

CORPS RESPONSE

HA. 1. The National Ocean Service C&GS will be kept informed of the status and plans of the project.

HB. 1. Option 1 has been identified as less acceptable and less desirable environmentally and economically. It is not the selected alternative.

HB. 2. See General Response #2.

HB. 3. See General Response #3 and new calculations of impacted areas.

HB. 4. See General Response #3.

HB. 5. See Response J. 11.

HB. 6. The project was designed to minimize alterations of flows or flushing regimes. The potential changes in velocities and pressures which are believed to be very small will be modelled in Pre-construction Engineering and Design Phase. The present design provides 8800 square feet of opening at msl (peak flow period), the narrowest upstream constriction being 8200 sf. Therefore, we do not anticipate alterations in tidal dynamics, estuarine flushing, or related water quality conditions as explained in the EIS.

HB. 7. See General Responses #1 and #4.

HB. 8. As discussed in General Response #2 the other options do not meet the project goals. The loss of habitat (as discussed in General Response #3) has been changed to total 3 acres. The project could be modified in response to critical levels of sea level rise (see General Response #4 and main report) prior to significant environmental impacts. All practical alternatives have been considered and the proposed plan (option 3) meets the needs of flood protection while it was also designed with all practical and appropriate mitigations.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Region
Management Division
Habitat Conservation Branch
One Blackburn Drive
Gloucester, MA 01930

September 12, 1989

Colonel Stanley J. Murphy
District Engineer
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254

Dear Colonel Murphy:

The National Marine Fisheries Service is opposed to the Saugus River Flood Damage Reduction Plan as proposed. After reviewing the Flood Damage Reduction Feasibility DEIS and comments from Federal, State and private conservation groups, it appears that there are feasible alternatives which can provide flood protection while minimizing impacts to fisheries and associated resources. We note the issues discussed by the above agencies which relate to this project and we concur with and support the findings. To avoid duplication, we will only summarize our concerns and state our recommendations.

Project plans call for flood damage reduction in Lynn, Malden, Revere and Saugus, MA. The Flood Damage Reduction Plan involves a 1660-acre saltwater estuary at the confluence of the Saugus and Pines Rivers.

The ACOE has evaluated three options in the DEIS. Option 1 would permanently destroy 37 acres of intertidal and saltmarsh areas and require construction of 8.8 miles of earthen dikes and concrete walls along the coast. This option is unacceptable to the NMFS because of the resultant adverse impacts to fisheries and associated resources. Furthermore, there are less damaging alternatives available. 1

Option 2 is a non-structural approach which involves flood-proofing buildings, flood warning and evacuation procedures. We prefer this option. It is the least damaging to wetlands and fisheries resources. This option can be enhanced for flood protection by the acquisition of floodplain land and augmenting flushing in the Pines River. This would occur by removing the I-95 fill embankment. These alternatives appear to address the flooding concerns of the community and must be discussed in detail in the DEIS. Also, option 2 in itself was not adequately addressed in the DEIS. 2

Option 3 is the ACOE preferred alternative for reducing flood

HB,

damage in the project area. This option includes a floodgate structure across the mouth of the Saugus River, and shorefront protection along Revere Beach, Point of Pines, and Lynn Harbor. Overall, 13.2 acres of aquatic habitat will be permanently destroyed, of which 9.4 acres is intertidal habitat and 3.8 acres is subtidal habitat. Another 5.9 acres of intertidal habitat would be affected during construction and 4.5 acres would require dredging. 3

INADEQUATE CONSIDERATION OF NON-STRUCTURAL ALTERNATIVES AND LOSS OF INTERTIDAL HABITAT

Adverse impacts associated with option 3 will result in filling 9.4 acres of intertidal habitat supporting significant concentrations of soft shell clams and blue mussels. Historically, this area was fished regularly, but over the years it has been closed to clamming because of pollution. However, this site continues to be excellent habitat for softshell clams and is a high producer of clam spat. The Division of Marine Fisheries is currently planning to restore shellfish in these areas. Any plan to fill would be in direct conflict with State objectives for this area. 4

It appears that 5 to 6 acres of fill in this intertidal area can be avoided through the use of either setback levees or vertical walls. The FEIS should evaluate this alternative and also consider construction of setback walls along most of the project area.

The DEIS discusses a plan to mitigate these impacts through removal of the I-95 fill embankment near the Seaplane Basin to create shellfish habitat. The current proposal is to create 10 acres of clamflats. Shellfish mitigation attempts to date have been largely unsuccessful, and therefore questionable. Because of this we do not consider creation of 10 acres of clamflats sufficient mitigation. Attempts at mitigation should be at a ratio of at least 2:1 because of the uncertainties associated with such replication projects. 5

CONSTRICTION OF TIDAL FLOWS

The proposed floodgate for option 3 has a great potential to constrict tidal flow at the mouth of the Saugus River . The plan to construct a 100-foot navigational gate and ten 14' by 50' flushing gates would constrict daily tidal flows through the flushing gate. These imposed higher velocities could impinge upon planktonic fish eggs, larvae and juveniles as they are forced through the gate opening under pressure. Furthermore, anadromous rainbow smelt spawn in the Saugus River and its tributaries. Since spawning success depends on hydrographic dynamics of watershed flushing any changes may disrupt the smelts' spawning success. The FEIS should discuss this potential as well as how changes in hydrology will affect other species. In addition, the constriction of flows may affect water quality by inhibiting 6

flushing rates, thereby exacerbating any existing pollution problems. New Bedford Harbor is a good example of a flood control project that has exacerbated a pollution problem through constricted flows. Smith Cove and the Head of the Harbor in Gloucester, MA are other examples of pollution problems as a result of restricted flows from man-made developments. Any future manipulation of water movements should seek alternatives that will reduce the possibility of causing perturbations. 6

FUTURE ECOLOGICAL IMPACTS

The potential for further adverse impacts can be expected to increase under forecasted conditions of sea level rise. If sea level rise occurs as predicted one can expect that the flood control gates will have to be closed more frequently causing increased disruption to tidal flows and tidal cycles. If this were to occur, how will sea level rise affect option 3 and what is the potential for long-term impact on anadromous and migratory fish? These concerns must be addressed in the FEIS. In addition, controlled water levels can and undoubtedly will stimulate increased development within the area. What rate of growth can be expected and how will increased development affect the estuary? 7

SUMMARY

We believe there are alternatives that will provide the needed flood protection while minimizing adverse impacts to marine resources. The loss of 13.2 acres of aquatic habitat is significant and needs to be reduced. With the predicted sea level rise there is a potential for long-term adverse impact affecting early life stages of anadromous and migrating species. We recommend that the ACOE consider a combination of non-structural alternatives, (flood warnings, land acquisition, removal of the I-95 fill, levees, landward structures, etc.). If a combination of these alternatives were adopted, adverse impacts would be minimized. 8

If you have any questions, please contact Chris Mantzaris at 508/281-9346.

Sincerely,

Thomas E. Bigford

Thomas E. Bigford
Branch Chief

cc: F&WS - Concord, NH
EPA - Boston, MA
DMR - MA
F/NER741 - Sue Mello
F/NER742 - Mike Ludwig
Conservation Law Foundation

HB3

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

MICHAEL S. DUKAKIS
GOVERNOR

JOHN DeVILLARS
SECRETARY

August 18, 1989

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Flood Damage Reduction Study
PROJECT LOCATION	: Lynn, Malden, Revere and Saugus
EOEA NUMBER	: 6497
PROJECT PROPONENT	: U.S. Army, Corps of Engineers
DATE NOTICED IN MONITOR	: June 26, 1989

The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the above project adequately and properly complies with the Massachusetts Environmental Policy Act (G.L., c.30, s.61-62H) and with its implementing regulations (301 CMR 11.00).

I am pleased with the joint EIS/EIR process to date on this project. I believe the joint process as developed by Joe Horowitz and Bob Hunt of the Corps of Engineers involving a Technical Advisory Committee and public meetings has moved towards an informed decision on both the federal and state level.

The state review of the Feasibility Report and Draft EIS/EIR over the extended review period has generated substantial comments from many groups and agencies. These range from the choice of options to requests for clarification of impacts, and ideas to avoid or reduce impacts. By state law, those comments and those in this certificate must be addressed in the FEIR which I expect will again be a joint federal/state document.

The meeting of the TAC on July 18, 1989 began the review process with several ideas to reduce impacts such as using the needed public areas along the Lynn shoreline to reduce mud flat impacts, and a need to quantify and delineate the needed flood storage area behind the tide gates. The FEIR must follow up on these issues as well as identify the need for future compensatory storage behind the structures.

The Tidal Flood Zone data presented in Volume 2, Appendix B should be reviewed by the appropriate FEMA staff and adjusted as necessary so that the FEIR predicted flood elevations can be adopted by the affected community upon implementation of the project. This data should also help quantify the existing development which would still be in the flood zones up to the 100 year event as regulated by both federal and state programs. 1

The FEIR, as identified in the scope, must include a draft Section 61 finding for the entire project, as the state sponsor and every state agency acting on the project must issue Section 61 findings with their actions. 2

August 18, 1989
Date

John DeVillars, Secretary

Comments received:
US F&WL - 5/4/89 & 7/21/89
US SCS - 7/11/89
US EPA - 8/14/89
Rep Mavroules - 7/10/89
MDC - 8/5/89
EOTC - 7/29/89
CZM - 8/10/89
DEP/DWW - 8/11/89
MAPC - 8/9/89
Revere Mayor - 7/25/89
Revere Pl & CD - 7/25/89
Revere City Council - 8/4/89 & 8/10/89
Saugus Conservation Commission - 7/25/89
SWIM - 7/20/89 & 8/4/89
MACC - 7/21/89, 8/7/89 & 8/10/89 7
Oak Island Assoc - 8/2/89
Bay Marine - 7/26/89
POP Yacht Club - rec. 7/28/89
Bill Hicks Esq. - 7/28/89
Philips Lighting - 7/7/89
SAVE - 8/15/89
Concerned Coastal Sportsmen - 8/4/89
Pines Riverside Assoc - 8/3/89
CLF - 8/14/89
Mass Audubon Society - 8/11/89
DEM 8/11/89

JD/DES/ds

I 2

CORPS RESPONSE

I. 1. The selected plan calls for any new development around this tidal estuary to comply with established FEMA flood insurance and floodplain management programs. If after completion of the Regional Floodgate Project, FEMA considers revising the base flood level for flood insurance purposes within the protected project area, this study should be done in coordination with the New England Division, Corps of Engineers. This study should also consider the impacts of sea level rise.

I. 2. The FEIR contains all Agency findings.

J. 1. The Water Resources Development Act of 1986 requires that projects be turned over to the non-Federal sponsor who is also responsible for 100% of the operation and maintenance. The Corps would prepare a regulation manual and operation and maintenance manual. Guidelines provided in the manuals must be agreed to as part of the non-Federal assurances. The Corps would be actively involved in training the MDC during the first few years of project operations and as needed thereafter. The Corps would be inspecting the operational capability of all project features semiannually and, as included in the local assurances, "Shall have the right to enter ... upon lands the local sponsor owns or controls for the project for the purpose of completing, operating, repairing, maintaining, replacing, or rehabilitating the project." The Corps has the authority and responsibility to assure that the project is properly operated and maintained by the non-Federal sponsor. The MDC intends to establish an escrow account to assure funds are available for proper operation and maintenance. The letter of intent provided by the MDC agrees to pursue funding from the State legislature and sign the items of local cooperation at the appropriate time. The four communities have also provided letters assuring to meet those items not in the direct control of the MDC.

J. 2. The Federal Government will sign assurances with the state sponsor. As provided by the letter of intent, the MDC intends to pursue 100 percent of the funds from the State Legislature for the Regional Project. The damages associated with major coastal storms significantly affects the resources of Federal, State and local governments, businesses, industries, regional transportation and utilities, as well as, the individuals in the flood plain.

J. 3. The Regional Plan was investigated for all three levels of protection, 100 year, 500 year and SPN, and found that the SPN produced the highest average annual net benefits, and was therefore selected among the three. The SPN is the goal for the level of protection especially in urban areas. See project optimization in the main report.

J. 4. The impact predictions generated for Option 1 included both direct loss of wetlands due to construction and losses attributable to isolation.

DS

COASTAL ZONE MANAGEMENT

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

100 Cambridge Street

Boston, Massachusetts 02202

RECEIVED

AUG 14 1989

MEPA

MEMORANDUM

TO: Steve Davis, Director, MEPA Unit

From: Steve Bliven, Acting Director, MCZM

Date: August 10, 1989

RE: EOEA # 6497 - Flood Damage Reduction Study: Saugus River and Tributaries, Vols. 1-8

The Massachusetts Coastal Zone Management (MCZM) Office has reviewed the Feasibility Report and Draft Environmental Impact Statement/Report for the project referenced above which was noticed for public comment in the Environmental Monitor dated June 26, 1989. It is the opinion of our Office that the Report generally meets the requirements of the Secretary's Scope issued on April 27,1987. It is requested that the following comments, based on our review of the entire report (Vols. 1-8), be addressed in the Final Report.

GENERAL COMMENTS

The average annual costs associated with the selected Regional Plan is over $8.9 million which includes $325,000 per year for operation and maintenance. As proposed, the yearly operation and maintenance cost is the responsibility of the local sponsor, presumably the Commonwealth. The question of accepting this responsibility will remain unanswered for doubtlessly some time to come. It is strongly suggested that the final report clearly articulate why the Corps does not plan to run the facility, particularly when the Corps-run New Bedford hurricane dike is so often referred to for evidence of a successful flood control project. It would seem to make sense that the Corps should assume full responsibility for the facility, should it ever be constructed.

J.

CORPS RESPONSE

J. 5. See General Response # 2 on Non-structural plans. The SPN flood plain was investigated for evaluating this option. The results were reported for both the SPN and 100 year flood plains. As with the other two options, only those alternatives which demonstrate economic feasibility can be included as plans warranting Federal implementation and cost sharing. In the case of non-structural plans, only those buildings demonstrating economic feasibility for flood proofing were included in the description for Option 2. For most buildings the average annual cost of flood proofing the buildings exceeded the buildings attainable average annual benefits.

J. 6. The EN gate scheme includes 12,170 SF of gated openings below mean sea level compared to 8800 SF for the selected plan's scheme N4. The estimated cost of the additional 3370 SF in scheme EN would increase the cost of the Regional Plan by about $15 million. The N4 gate scheme provides slightly more flow area than currently exists at the location of the floodgates, and therefore, would approximately match existing currents. As shown in Appendix B, pages B-92 and 93 there would be less than 0.05 foot change in high and low tides in the estuary. The timing delay of high and low tides (page B-94) would be 0.5 and 1 minute, respectively, for maximum astronomic tide range which rarely occurs each year. For scheme N4, also, there would be less than 0.1 percent change in flushing volume for all conditions (pg B-95). Because of the minor changes in tide conditions with the N4 Gates, the additional expenditure of $15 million for scheme EN was not warranted.

J. 7. The water quality analysis in the report is based on the present water quality classification of SB. The primary difference between the SB and SA classifications is that shellfish harvesting in approved areas without depuration is a designated use for SA, while SB classification designates shellfish harvesting with depuration (Restricted Shellfish Area). The total coliform bacteria criteria for each class is different; Class SA waters must have a median value not to exceed 70 MPN per 100 ml with not more than 10% of the samples exceeding 230 MPN per 100 ml in any monthly sampling period, while SB requires not more than 700 MPN per 100 ml as a median value with not more than 20% of samples exceeding 1000 MPN per 100 ml on a monthly basis. Presumably the tighter total coliform bacteria criteria and excellent water quality conditions of class SA offset the need for shellfish depuration as specified in class SB.

Waters which constitute an outstanding national resource as determined by their outstanding recreational, ecological and/or aesthetic values are required to be preserved under the Anitdegradation Provisions of the standards, if so designated by the Division of Water Pollution Control. These waters may not be degraded and are not subject to a variance procedure. New discharges of pollutants to these waters are prohibited and existing discharges must be eliminated unless it is demonstrated that alternative disposal means are not reasonably available or feasible and the discharge does not affect the quality of the water as a national resource.

Our other concern over the funding of this project, regardless of the option chosen, is the fact that the individuals and businesses that receive direct social and economic benefits from flood protection are not being required to contribute to the cost of the project. The costs associated with major flood damages are basically borne by two entities, the federal government and individuals affected by the storm. The local and state governments provide support services, the costs of which are largely reimbursed by the federal government. This project would provide an excellent opportunity for the federal government to require cost sharing with the recipients of the benefits. This may take creative and expansive policy thinking on the part of the Corps, but it may be a worthwhile exercise. 2

Our third general comment concerns the magnitude of the Standard Project Northeaster (SPN). For planning purposes, it is the 100-year storm that is typically used. For extreme cases, such as "critical actions" as defined by Executive Order 11988, the 500-year storm flood level is used. It is perhaps excessive to define a storm event of a magnitude even greater than the 500-year storm. The greatest benefit appears to be the increase in the number of buildings that would be protected by the floodgates and thus increase the benefit/cost ratio. It is requested that the benefit/cost ratio be examined for the selected Regional Plan based on a 100 and 500-year storm. 3

PLAN OPTIONS

Option 1 The local protection plan does not fully explain the potential impact of the walls on wetland losses. Specifically, will the construction of new seawalls or revetments cut-off areas of saltmarsh and if so, has this been accounted for ? 4

Option 2 It remains the opinion of our Office that nonstructural flood control methods are preferable over more costly structural ones. Option 2 has the highest benefit-to-cost ratios (1.8-2.4), yet does not receive the endorsement as the selected plan. Although there may be some legitimate reasons for this, we would like to review the nonstructural option in more detail. Specifically, we are concerned about the lack of documentation of flood proofing potential. On page A-71 of Volume 1, the Report states: 5

> "Out of 2100 homes surveyed in the 100-year (i.e.,1978) floodplain, only 171 were potential candidates for home raising or 8%. Out of 585 commercial and public buildings 68 or 12% were estimated to be candidates for Closures."

The questions we have are: a) why was only the 100-year floodplain rather than the SPN used to evaluate this option, and b) why were so few buildings potential candidates for floodproofing ? Were

CORPS RESPONSE

The ACEC designation which calls for the above tight standards specifically exempts the Corps project in recognition of the projects public benefit. See letter dated August 22, 1988 in Appendix I, Vol. 5, pg. D. 35.

The flood damage reduction project will not change the quality or quantity of discharges which enter the estuary. We feel that the project will also have minimal effects on these pollutants after they have entered the harbor because of nearly unchanging flushing characteristics during open gated conditions and the infrequency and short length of the gate closure. Also re-entrainment of any pollutants immediately after gate closure is expected. (See Appendix C, Section 3 Future Water Quality)

Pages C-22, 45 and 50 (Appendix C) of the report indicate, based on State and Corps data, that coliform bacterial contamination frequently exceeds the present SB standards during storm runoff events due to point and non-point pollutional discharges. Proposed more restrictive SA standards will be met even less frequently either with or without the floodgate unless pollutional discharges are curtailed.

J. 8. The proposed tidal floodgate which will nearly always be opened, (present sea level condition) will not measurably change natural tidal flushing or alter upstream pollutional characteristics for this condition. During the average gate closures of 2 to 3 times a year for a duration of about 1 to 2 hours around peak high tide, tidal flushing will be temporarily interrupted and storm water runoff retained only to be released with the outgoing tide. The floodgate will not generate pollutants to be discharged, but will only retain upstream pollutants for the 1 to 2 hour closure period with nearly immeasurable effect on ambient water quality conditions.

As stated on page C-69 of the report, the estimated freshwater flow peak of 550 cfs (10 percent chance of occurring when tides are high) from a representative watershed occurring for 6 hours would only produce about 270 acre-feet of fresh water. With the interior pool initially at 7 feet, NGVD, the rise in water level would be about 0.3 feet. The storm water runoff would be about 3 % of the combined salt and fresh waters and with associated storm winds and waves and resultant mixing, water quality changes should not be significant. (Additional, see response to comment AA1) Under today's sea level conditions, the gates would be closed about 0.02 - 0.07 percent of the time resulting in immeasurable water quality changes (Page C-88), with sea level rise of 1, 2, 3, or 4 feet, the percent of time of gate closure could be 0.8 - 1.5, 6 - 10, 18 - 26 or 33 - 41, respectively.

homes evaluated for methods of floodproofing other than just raising ?

Option 3 The discussion and data presented for the Selected Plan is relatively complete and thorough. Additional comments that pertain mostly to this Option will be presented in the following sections of this memorandum. One specific issue however, that should be further explored in the Final Report concerns the design of the gate structures. Scheme EN appears most optimum in that it has essentially no negative impact on flow velocities, low/high tide levels(amplitude), or tide timing (phase). Reference is made to excessive costs of this Scheme being the reason it was not pursued but no documentation is presented. This needs to be clarified. 6

It should be noted once again that, as stated in our comments above, our Office does not favor the structural approach to the coastal flooding problem.

WATER QUALITY

Our review focused particular attention on the Water Quality Report (Vol.2). Clearly, one of the Commonwealth's greatest concerns is to protect and where possible, enhance marine water quality. Several questions are raised by the discussion presented in the Water Quality Report. First, the water quality analysis appears to be based on the present water quality classification of SB. The newly revised State Water Quality Regulations propose to reclassify the Saugus River waters as SA, and identify the areas an "outstanding natural resource" which carry's the highest antidegradation standard. The Final Report should re-examine the water quality data based on the higher SA classification. 7

The effect of tidal flushing on storm water runoff contaminants received inadequate attention. It is requested that a complete evaluation be presented of storm water runoff quality and how it is affected by tidal flushing. Particular attention should be paid to those periods when the tidal gates are closed. 8

Tables 9 and 10 present water quality data for the Saugus River but there is no way to compare this data with existing water quality standards. The Final Report should compare the sample results to the standards so it can be documented where the standards are exceeded. 9

Our final concern about water quality is the apparent lack of understanding of the CSO issue in this geographic area. A more detailed analysis is needed of the ongoing planning efforts of the local communities and the State to redesign the CSO's in the area. 10

CORPS RESPONSE

Water quality changes (due to the floodgate) resulting with a foot of sea level rise will be hard to notice. Changes with two or more feet would become increasingly more apparent (Page C-89). The evaluation of storm water runoff is believed adequate for existing sea level conditions and up to about one foot of sea level rise. Should sea level rise exceed about one-foot and gate closures are significantly increased, significant water quality changes would be expected and should be the subject of a much more comprehensive study. However, options to raise the start of flood damages could be evaluated which could return gate closure to a few times a year during coastal storms as would presently occur, with no significant water quality changes.

J. 9. Water quality standards and criteria are discussed in tables 2 and 12 of Appendix C. The standards were used to qualitatively analyze the sample results (Pages C-45 through C-53).

J. 10. The Corps recognizes that CSO pollution is a principal factor in the present water quality degradation in the Saugus and Pines Rivers tidal system. With or without the tidal floodgate, (except in the case of significantly more gate closures as stated above), water quality conditions in the tidal area will continue to be primarily affected by point and non-point storm water runoff. The floodgate will not significantly exacerbate that condition with todays sea level. With more frequent closures of the gate due to sea level rise, as discussed above, the water quality effects of the floodgate could be significant and would require study in much greater detail. The Corps has participated in the technical review group of the Lynn Water and Sewer Committee's CSO study and feels that CSO effects have been adequately considered in the Corps study.

J. 11. Any mitigation in excess of habitat value compensation would be classified by Corps policy as environmental enhancement. We would expect our mitigation scenario to be adequate and that the public benefits of this project will warrant the Commissioner of DEP to issue appropriate variances.

J. 12. See Project Revisions for the revised Mitigation Site. The new site is flushed directly from the Pines River.

J. 13. The Hydrology & Hydraulics Appendices discuss gate closure impacts on estuary circulation in detail. No further analyses will be generated for the FEIS.

J. 14. See General Response #1 which addresses protection of the estuary storage area.

J [illegible]. See General Response #4 regarding Sea Level Rise. See Response E.

J. 16. The discussion and analysis of sea level rise impacts were conducted in accordance with Corps guidelines and Policy. Also see General Response #4.

WETLANDS IMPACT

Several questions arise regarding potential wetlands impacts. First, the proposed 10 acre mitigation site represents a 1-for-1 replication effort. The long standing State policy regarding wetland mitigation, as implemented by the Department of Environmental Protection (DEP), requires at a minimum, 2-for-1 replication and, only following the issuance of a Variance by the Commissioner of DEP. 11

Also, the location of the proposed mitigation site adjacent to a highway is not desireable. Runoff and contaminants from the roadway will most likely prevent the site from ever becoming a viable resource. A better location must be identified in the Final Report. 12

A somewhat more remote issue regarding wetlands impacts is the question of how gate closure might affect the "cleansing" action of tidal flushing on the saltmarsh. The normal flushing action across a saltmarsh acts to circulate nutrients, particulate matter, etc. throughout the marsh and acts to "cleanse" the wetland. An analysis of the gate closure on saltmarsh circulation should be included in the Final Report. 13

INDUCED DEVELOPMENT

The question of induced development resulting from the Floodgate Plan remains a point of disagreement. The Draft Report contends that implementation of the Plan will not induce future development within the floodplain. Our Office strenuously disagrees with this position. Although the proposed enforcement and monitoring program attempts, on paper, to address the problem, the likelihood of it actually accomplishing its goal is virtually zero. Presently, the Commonwealth and the federal government protect estuaries to the maximum extent possible. The Commonwealth has had a Coastal Enforcement Specialist working on the North Shore for several years and yet, despite all our efforts, illegal filling in the estuary continues. The Draft Report clearly identifies the existing pressure on the estuary by documenting the issuance of seven Cease and Desist Orders over a seven month period. It is the position of our Office that once flooding of the study area is reduced, <u>pressures on the estuary will increase</u> and the project will not comply with Executive Order 11988. In addition, our Office believes that ownership of the saltmarsh, either in its entirety or simply the fringe area, must be an integral component of the Selected Floodgate Plan. The ownership might take several forms such as fee simple, development rights transfer, etc. The real estate evaluation presented in the Draft Report does not detail how the appraisals were conducted for the saltmarsh property. This should be thoroughly detailed in the Final Report. 14

J.

SEA-LEVEL RISE

The Draft Report presents a fairly good analysis of sea-level rise and the sensitivity of the Selected Plan to various sea-level rise scenarios. Unfortunately however, the Draft Report falls far short of accepting an increased rate of sea-level rise as a real issue to be incorporated in the ultimate design. The present Corps planning mandate is to only consider local regional historic rates of sea-level rise. This attitude is extremely shortsighted, particularly in light of the results of the sensitivity analysis performed for the projected rates of rise. For example, Table 41 (page B-129), clearly indicates that a 1 foot rise, which is fully expected to occur within the life of this project, will result in 35-40 annual floodgate closures. A 2 foot rise, a highly probable scenario, would result in 175-225 annual floodgate closures. Finally, a 3 foot rise, still a possibility, would result in 400-450 annual floodgate closures. It should be evident that once the present sea-level condition is exceeded, the number of annual gate closures (and the increased closure duration) will begin to be more significant to potential estuary impacts. Also, the more frequent and longer duration the closures are, the greater the possibility of ice forming around the gates or within the estuary itself. This concern should be addressed in the Final Report. 15

How the Corps can ignore the results of the sea-level rise analysis and not incorporate them into the Selected Plan is astounding. It is the opinion of our Office that the projected rates of sea-level rise should be anticipated and planned for. It is most unlikely that we could ever approve a project of this magnitude without projected sea-level rise accounted for.

Our final comment regarding sea-level rise concerns the broader question of society's approach to dealing with this problem. The flood control project before us now is in fact a response to problems resulting from, in part, sea-level rise. The price-tag associated with this response is approximately 80 million dollars. The tax-payers of our nation are being asked to pay the bill for this project. The public policy question that must be addressed is ...How long can the tax-payer be expected to accept this responsibility ? As sea-level continues to rise, whether it is 1 foot or 4 feet, the frequency and magnitude of coastal flooding will increase with time. At what point does the government draw the line and say seawalls and floodgates can not be constructed to protect our entire coastline. These decisions are before us now as evidenced by this project, and we must begin to evaluate them in a much broader perspective. 16

In closing, we would like to state our satisfaction with the coordination efforts that have accompanied the generation of the Draft Report. The exchange of information, thoughts, and concerns

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has been beneficial and productive. The data and analysis contained in the Draft reflect hard work and a commitment to this project by Corps personnel. We believe that much of the success of this endeavor is the direct result of the hard work by Dr Joseph Horowitz and Mr Robert Hunt. Both of these gentlemen have gone out of their way to keep our Office well informed every step of the way.

cc: Mr Robert Hunt, COE
Ralph Perkins, DEP
Judith Skinner, MACC
Judy Perry, DWPC

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Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Management

100 Cambridge Street
Boston
Massachusetts
02202

**Division of
Water Resources**

August 11, 1989

Steve Davis, Director
MEPA
100 Cambridge Street, 20th Floor
Boston, MA 02202

AUG 1

Re: EOEA No. 6497
Saugus River and
Tributaries Flood Damage
Reduction Study: Lynn,
Malden, Revere, Saugus

Dear Mr. Davis:

The Division of Water Resources is the State Coordinating Office for the National Flood Insurance Program. Division staff provide information and assistance to communities which participate in the National Flood Insurance Program (NFIP). All the communities in the study area do participate in the NFIP.

The Division in implementing the NFIP promotes a "bottom-up" approach to floodplain management. This approach is based upon a municipality taking its own initiative to address the flooding problems it faces. This self-help approach requires a high level of coordination, communication, planning and information distribution within the community, between municipal governing bodies and these bodies and property owners within the floodplain. The Division therefore reflects a perspective on floodplain management which asks a community to do all that can be reasonably expected within its power to protect its citizens, municipal employees and property owners from the potential damage and hazards due to flooding.

This office believes that a nonstructural approach to flood hazard management is preferable and that structural solutions should be implemented only if nonstructural techniques are attempted and fail to meet the desired goals. The final EIR should consider more thoroughly the full range of nonstructural measures available for the study area to include:

1. Increase Assessment of Existing Flood Hazard Mitigation Activities in Study Area

Community-initiated floodplain management typically involves a prominent nonstructural component to flood hazard mitigation. The EIR provided reveals little about what floodplain management practices are in place within the study communities. At a minimum we would like to see a full inventory

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of existing flood hazard mitigation practices in place for each community. Plans and procedures relating to property protection, assurance of personal safety, alternative transportation plans and loss of employment contingencies should be included. Based upon an assessment of any existing flood hazard plan in place for the study area we can determine the extent to which a nonstructural approach to the Saugus River area flooding problem is feasible. Preferential consideration of the Option 3 plan should not be given or implied until consideration of a nonstructural option consisting of many individual components has been exhausted. The follow-up obligations of the study area communities relating to regulation of land use surrounding the marsh and Corps-designated 100 year floodplain require coordination and planning between municipal bodies. This planning would require coordination skills similar to a nonstructural approach to floodplain management. Generally, this office is concerned about the abilities of the study area communities to coordinate and monitor land uses of the marsh and surrounding floodplains following the construction of the proposed floodgates as outlined in the Flood Damage Reduction Main Report, pages 105 and 106, items e, f, g, h, i. These responsibilities relate to requiring compensatory storage, publicizing floodplain information, zoning, preventing unwise future development in the floodplain, etc.

Although the appendices G-Economics and H-Socioeconomic (pages 29-45) identify some local Barriers to Development in place these few rather minimal requirements do not reflect a level of nonstructural proactive floodplain management we would expect from one of the most floodprone areas of the New England coast. Other Massachusetts communities with lower amounts of flood damage have mustered municipal initiatives in the form of more restrictive zoning requirements or additional permit-issuing staff (i.e., Building Inspector, Conservation Agent) to contend, through a self-help approach, with the flood hazards they face. Between 1987 and 1988 the total number of flood insurance policies in effect for the communities of Lynn, Revere and Saugus dropped 20%. A community effort to promote flood protection through policy sells would be a good example of a step communities could take to protect their citizens from flooding.

2. Develop a Substantial Protection Threshold

In an effort to assess the level of protection provided for the dollars spent on this project, this office would like to see an itemized cost report which would provide projected costs necessary to achieve 100% protection through nonstructural measures of the four major vulnerability categories--transportation, employment, property damage, personal safety. The Option 3 proposal provides the greatest level of protection for the greatest cost. This office must ask whether there is a "substantial" level of protection provided by expending significantly less money. An itemized cost report should provide data for the 100 year flood with a one-foot sea level rise factor added and the SPN level.

The state-funded commitment required for Option 3 is significant. Due to the fiscal constraint placed upon the Commonwealth at this time, it is questionable whether the assurance of the local and state share would be available in the near future. Each year that passes as the study communities await completion of Option 3, if it were the agreed plan, will be lost opportunities to undertake a serious nonstructural approach to the flooding problem of the study area. Adopting Option 3 will result in no further

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CORPS RESPONSE

K. 1. See General Response #2 for discussion of Non-structural Plans. The preparation and evaluation of existing flood preparedness plans and needed modifications would be accomplished in the Design Phase. General Response #2 discusses why flood warning and evacuation in the Coastal flood plain would not be effective and public safety cannot be assured.

K. 2. The items of local cooperation appear in the local assurance which are a legal binding agreement. The MDC requested concurrent or joint agreements with the three communities surrounding the estuary on these items. The communities of Lynn, Revere and Saugus have provided letters of assurance to meet these obligations.

K. 3. With insurance the risk of flooding is spread over time with premiums covering insurable damages. However, insurance does not cover all damages. Some items, such as cars are excluded from coverage. Policy holders pay a deductible and there are limits to the extent of coverage. The National Flood Insurance Program (NFIP) does shift some of the cost of flooding to inhabitants living outside of the floodplain as premiums are subsidized. Additionally, the administrative costs of NFIP are financed by the general public.

K. 4. See General Response # 2 describing the Non-structural Analysis.

K. 5. Non-Federal funds will not be required, at the earliest, for another four years and then periodic funding would be required over the four years construction period. General non-structural methods are provided in Addendum 5 at the end of Appendix A. Any new or improved developments will need to continue to comply with FEMA flood plain zoning requirements. As has occurred during the planing process and will continue in design, gaging stations and coastal flood monitoring and warning for the study area will continue by the Corps in an effort to alert the communities to pending flooding. Additional measures to improve flood preparedness would be accomplished as part of the design stage in preparation of the completed project. These various measures will be used to assist the communities prior to and during construction.

K. 6. The Main Report and Plan Formulation Appendix discusses the full range of alternatives considered for nonstructural plans prior to the detailed analysis of Options 1, 2 and 3.

K. 7 - 12. See General Response #2 for Non-structural measures. Also the measures listed in item 3e are either requirements of the local assurances, or would be considered in preparing the detailed Flood Preparedness Plans required as part of the project.

K. 13. See General Response #1 regarding estuary protection and development and response I. 1.

protection from flood hazards until such date as the floodgate is constructed and operable. This office believes that the EIR should consider more thoroughly the full range of nonstructural measures available for the study area. Although these nonstructural measures would be provided as part of the assessment data used to evaluate the Option 3 proposal, it would be of great value to the study area communities immediately. This information could be used as a reference source for nonstructural flood mitigation techniques available to the study communities. 6

3. Expand Nonstructural Considerations

A nonstructural plan for floodplain management typically involves a prominent acquisition and relocation component. This approach has several impediments for the study area as previous documents have indicated. There are, however, a large number of other initiatives which could be undertaken by the communities. We would like to see further investigation into these initiatives by the USACE to assess their feasibility and cost. Possibly these may provide a substantial level of protection for a nominal cost when compared with the Option 3 plan. Suggestions to pursue include the following: 7

a. Transportation-- Investigate the use of shuttle buses to reroute commuter rail passengers around the Saugus River from North Station or the Chelsea Station to Lynn Station. This has been done effectively in past years during bridge construction on the North Shore line. 8

b. Structure damage-- Investigate possibility of a 50/50 cost sharing approach to elevate and retrofit homes and other buildings. Use USACE professional staff to conduct flood audits and propose technical design suggestions. Promote the purchase of flood insurance. Pursue a special legislative effort which would develop a mitigation fund from which low interest loans could be obtained for retrofitting and floodproofing. Requirements would be modeled after the SBA program of the same purpose. 9

c. Employment-- If many of the referenced measures were taken to protect structures and inventory, then businesses would be more capable of functioning. Nevertheless, determine what financial assistance is available to pay employees for clean-up, etc., from disaster relief sources. 10

d. Personal Safety-- Investigate feasibility of storm warning and tidal surge prediction system. Determine practicality of standardized occupant alert and evacuation system. Identify public vehicle reserve program whereby buses would be put into service for evacuation before a hazardous condition develops. Project local cable and radio station resources for communications. 11

e. Local nonstructural measures
-protective bylaws covering construction requirements in the Corps 100 year floodplain 12

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-a Community Floodplain Management Plan for each study area community which would identify the roles and responsibilities of community officials responsible for overseeing activities in the Corps 100 year floodplain

-the formulating Constitution and Bylaws of an intercommunity Commission with designees from each study community and appropriate state and federal agencies. This Commission would monitor and oversee land use in the study area after construction of the proposed floodgate. A status report would be provided to the Secretary of Environmental Affairs each year after construction for 5 years and then every 2 years for a determined time period. 12

-approved and amended Comprehensive Emergency Management Plans for each community in the study area.

-promotional and educational material provided by the study communities to residents relating to retrofitting, purchasing flood insurance, low interest loans, etc.

These local initiatives are not only sound flood hazard protection measures, but enactment could qualify as "credit" under the NFIP's Community Rating System. This entitles policy holders in communities which require stricter standards than the NFIP to receive a reduction on their premium rates.

4. Reconsider Conclusions of IEP Report

The Division is generally pleased with the level of detail contained in appendices G-Economics and H-Socioeconomic concerning Flood Damage Reduction. We view this information as providing more evidence of the threat of induced development in the study area. If the proposed floodgate is constructed then the Federal Emergency Management Agency will need to conduct new flood insurance studies for the study communities. These studies would revise the extent of the special flood hazard areas to account for the effects of the floodgate. These revisions would eliminate the extent of the special flood hazard area thereby reducing the amount of area regulated by the construction requirements of the NFIP. This would reduce the costs of development in these areas. The low supply and high demand of developable property in this area would induce new development in the 588 lots identified. Page 92 of appendices G-Economics and H-Socioeconomic indicates several reasons which would contribute to an improved developable condition of the study area. The Division would like further information on why the IEP report concludes that induced development would be minimal when the data suggests the contrary. 13

This office is continuing to investigate the projected disaster relief savings presented in the EIR. Changes in the federal disaster relief regulations (the Stafford Act of 1988) restrict assistance to repetitively damaged structures and increases assistance for retrofitting structures. These changes may affect the benefit-cost analysis of the proposal. They may also increase the merits of a nonstructural approach to the flooding of the study area.

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The New England Division of the Corp is established as a national leader in adopting nonstructural strategies to flood hazard reduction. The Charles River NVS project has received national acclaim as a successful multiobjective approach to floodplain management via nonstructural initiatives. This office looks forward to further analysis by the NED on nonstructural alternatives to the Saugus River flooding dilemma. We would like to ensure that serious consideration be given to achieving a substantial level of protection for all the vulnerability categories through nonstructural options. Thank you for your consideration of these comments.

Sincerely,

Richard H. Thibedeau
Director

K.

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

Department of Environmental Quality Engineering

One Winter Street, Boston, Mass. 02108

Daniel S. Greenbaum
Commissioner

AUG

TO: Steve Davis

FROM: Christy Foote-Smith, Acting Director, DWW

DATE: August 11, 1989

SUBJ: EOEA #6497 (Saugus River/Flood Control)

The DEP Division of Wetlands and Waterways has reviewed the Draft EIS/EIR submitted by the US Army Corps of Engineers (ACOE) for the Saugus River and Tributaries Flood Damage Reduction Study (EOEA #6497). Following review of the document, the Division continues to have serious concerns about the ACOE preferred option of using dikes and a floodgate as a means of providing flood protection along this section of the coastline.

In a February 12, 1986 letter to the ACOE, the Division supported the option of using non-structural means to provide flood protection in this area (copy attached). It is the Division's opinion that the non-structural option has not been adequately explored. The DEIR dismisses this option as inadequate since only 7% of the potentially impacted structures would be candidates for protection via floodproofing and/or raising. The Final EIR should provide, in much greater detail, the analysis that was used to make this determination. Using this option for various size storms, the Final EIR should distinguish between the number or percent of structures that would be temporarily damaged (eg. wet basements), versus those that would be more severely damaged or destroyed. As the U.S. Fish and Wildlife Service (USFWS) points out in their May 4, 1989 letter, low participation (ie. few claims after the 1978 storm in the National Flood Insurance Program) may indicate that flooding may not be perceived locally as a major problem. The FEIR should address this issue in more detail. Furthermore, a clear definition of "floodproofing" should be provided. The ACOE seems to be defining this only in terms of closure structures. Some of the potentially impacted structures may be candidates for other methods of floodproofing, such as sealing basements and/or drainage diversion. The criteria should be provided that were used to determine whether raising a particular home or building was feasible.

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It is the Division's opinion that the environmental impact of the ACOE preferred option has been significantly underestimated. The various activities associated with this option will impact areas both within and adjacent to wetland resource areas. For example, under the preferred option, 9.4 acres of intertidal and 0.6 acres of subtidal habitat loss would be mitigated by creating a 10 acre clam flat adjacent to the Seaplane Basin shellfish flats. This will be accomplished by removing acres of fill from the abandoned I-95 highway. This area is surrounded by saltmarsh and other resource areas protected under the Wetlands Protection Act. Changes in the hydrology of this area could have severe impact on the viability of these resource areas. The Final EIR should provide a very clear analysis of the impact that will occur on adjacent shellfish flats and surrounding wetland resources areas. The document should provide much more detail regarding the immediate and long term impact the project may have on all the resource areas protected under the Act. The analysis should include impacts due to direct construction of the proposed structures (including access impacts), and possible indirect impact due to sedimentation and changes in hydrology. Furthermore, the Final EIR should further explain the claim made in the DEIR that the "no action" alternative will result in the loss of hundreds of acres of wetlands due to transportation projects and illegal filling while the preferred option will have "no vegetated wetlands lost" due to increased protection by monitoring and enforcement (Table 5.1). 3 4

Given today's budgetary considerations, it is surprising to encounter a project proposal which depends upon and which anticipates significant state/local financial commitment for a long period of time. Further, it is unsettling to consider that once built, the project's proper operation will depend heavily upon that commitment. The Final EIR should discuss this issue in further detail. The Division remain generally skeptical of the merits of mechanical structures to control flooding. The inland wetland regulations (310 CMR 10.57) require that flood compensation be provided for all fill placed within the 100 year floodplain. The compensatory flood storage area must have an unrestricted hydraulic connection to the adjacent waterbody or waterway. Mechanical means of controlling flooding is always theoretically possible and on occasion has been shown to be successful. However, the Division has seen too many cases where these structures fail after a prolonged period of time. In some cases, such as in Boston (Pleasant Bay) and Quincy these structures have failed because of inadquate maintenance due to budget constraints. In other cases, as in Peabody and Revere, tidal flooding has occurred as a result of a blocked culvert or a broken hinge on a tidegate. Any failure in the type of structure being proposed under the preferred option could have a severe environmental consequences. 5 6

In summary the Division remains unconvinced that the ACOE preferred option is the best alternative both in terms of flood protection and environment impact. Should the proponent choose to pursue to the structural option, a variance request under the Wetlands Protection Act appears unavoidable, and the Final EIR must provide the information necessary to evaluate such a request. 7

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CORPS RESPONSE

L. 1. See General Response #2.

L. 2. See General Response #2 and "Attachment to Volume 5, Appendix 1 Planning Correspondence - U.S. Fish and Wildlife Service, Final Coordination Report and Letter of Response from New England Division" for a detailed discussion of this topic.

L. 3. The mitigation area was selected with consideration of hydrological impacts to the Sea Plane Basin and adjacent systems. The revised location would flush directly from the Pines River, and increases the estuary area west of the I-95 fill (444 Ac) by less than 1 percent. No adverse impacts to adjacent resources are anticipated.

L. 4. The statement quoted for the "no action" alternative is a statement of future without project conditions. The references to "no vegetated wetlands lost" is a statement on how the project will not impact or exacerbate existing or future losses.

L. 5. The Final EIS/EIR will not have all details of cost sharing and Operation and Maintenance agreements negotiated. However, major items required in the local cooperation agreement are listed in the main report. Also see Response J. 1.

L. 6. See Response J. 1.

L. 7. The Corps believes the FEIS/FEIR contains adequate information to justify necessary variances to be issued by the Commissioner Department of Environmental Protection.

L. 8. FEIS Table 11.1 and discussions on page EIS-169 are adequate for FEIS/FEIR reporting. Specific variance and waiver procedures will be pursued.

L. 9. All referenced information is contained in the project documents. It will be specifically formatted as requested as the specific variances and waivers are pursued. The letters from the five project sponsors and others, as well as the ACEC nomination recognized the need for this project.

L. 10. The mitigation area has been coordinated with appropriate agencies and real estate rights and easements will remain the responsibility of the local sponsors. I-95 land in the vicinity of the mitigation site is reportedly in the process of being turned over to the MDC. No objections to this location has been provided by either the MDC or DPW.

L. 11. See response L. 9.

M. The Corps would coordinate design efforts with the DPW.

N. The concerns raised by MAPC representatives have been responded to through reference to their attached letters.

The ACOE preferred option cannot, in all likelihood, be constructed without a variance from the performance standards set forth in 310 CMR 10.00. An evaluation of waiver issues under MGL C. 131, S. 40 was required in Secretary Hoyte's April 27, 1987 scoping document. Despite discussions in the text (EIS-169) and Table 11.1 concerning the general waiver procedure, the variance issues raised by this proposed project are far from being fully discussed. 8

The proponent should discuss in the Final EIR each of the Department's variance criteria in relation to the proposed project. The Department's variance procedures to obtain a waiver of the Wetlands Regulations are contained in 310 CMR 10.36 (for coastal wetland resource areas) and 310 CMR 10.58 (for inland resource areas). The variance procedure requires that the proponent demonstrate that:

(1) there are no reasonable conditions or alternatives that would allow the project to proceed in compliance with the regulations;

(2) that mitigating measures are proposed that will allow the project to be conditioned so as to contribute to the protection of the interests identified in the Act; and

(3) that the variance is necessary to accommodate an overriding community, regional, state, or national public interest; or that it is necessary to avoid an Order that so restricts the use of property as to constitute an unconstitutional taking without compensation. 9

Included in this discussion should be an analysis of whether the non-structural flood damage reduction option is a reasonable alternative under the Department's variance criteria. Such an analysis will be required for the Department to acquittal respond to a request for a variance of the wetlands regulations. Furthermore, much of the project impact area is in an ACEC and the Commonwealth's Executive Order Number 181 would appear to prohibit the ACOE preferred option since state funding might not be allowed for alteration of barrier beaches and development within velocity zones and primary dunes. The proponent should be required to address these issue in the FEIR as part of the discussion of alternatives required for consideration of a variance under 310 CMR 10.00.

More information should be provided on the geographic areas the proponent plans to use to mitigate wetlands alterations. The Department assumes that the proposed mitigation area by I-95 is owned by the State Department of Public Works (DPW). The proponent should explore in the Final EIR whether the DPW will be willing to to make the land available for purposes of carrying out this project. 10

This project may also require a variance pursuant to the Regulations For The Administration of Waterways Licenses (310 CMR 9.00). As such, the proponent should be required by the Secretary to include in the Final EIR an assessment as to whether this project meets the Department's Waterways Variance criteria specified at 310 CMR 9.06(12). 11

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E.O.T.C. # 89-0262

The Commonwealth of Massachusetts

Executive Office of Transportation & Construction

Office of the Secretary

10 Park Plaza, Room 3510
Boston, MA 02116-3969
Telephone 973-7000
TTY (617) 973-7306

Michael S. Dukakis
Governor

Frederick P. Salvucci
Secretary

M.B.T.A. Chairman

FEASIBILITY REPORT &
( ) E.N.F. (X) DRAFT E.I.R. ( ) FINAL E.I.R. No.: 6497

DATE: 06-19-89 DATE RECEIVED: 06-19-89 COMMENTS DUE: 7 26 89

TOWN/CITY: SAUGUS RIVER & TRIBUTARIES,
LYNN, MALDEN, REVERE AND SAUGUS, MASSACHUSETTS

PROJECT PROPONENT: U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DIVISION
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS

PROJECT DESCRIPTION: WATER RESOURCES INVESTIGATION - FEASIBILITY REPORT AND DRAFT ENVIRONMENTAL IMPACT STATEMENT AND ENVIRONMENTAL IMPACT REPORT, SAUGUS RIVER AND TRIBUTARIES, FLOOD DAMAGE REDUCTION STUDY, LYNN, MALDEN, REVERE AND SAUGUS, MASSACHUSETTS.

(/) COMMENTS (SEE ATTACHED) ( ) NO COMMENTS M,

DATE: 7/27/89

FREDERICK P. SALVUCCI

The Commonwealth of Massachusetts
Executive Office of Transportation & Construction
Office of the Secretary
10 Park Plaza, Room 3510
Boston, MA 02116-3969
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Michael S. Dukakis
Governor
Frederick P. Salvucci
Secretary
and
M.B.T.A. Chairman

EOTC COMMENTS ON DEIR-FLOOD DAMAGE REDUCTION
SAUGUS RIVER AND TRIBUTARIES
EOEA #6497

EOTC has reviewed the Flood Damage Reduction Feasibility Report. The report presents three options to reduce the potential for flood damage to occur in the communities of Lynn, Malden, Revere and Saugus. The preferred alternative entails the construction of a floodgate structure on the Saugus River as well as flood walls and dikes along Broad Sound. The U. S. Army Corps of Engineers is the Federal sponsor and the Metropolitan District Commission is the State sponsor of this project.

The proponents should work closely with the Massachusetts Department of Public Works in developing plans for mitigation in regards to state owned highways in the area. In addition the proponents should work closely with the MBTA in the design of proposed work as it pertains to improvements which will affect both the MBTA's Blue line and commuter rail line.

07/10/89

M2
ATTACHMENT

Metropolitan Area Planning Council

60 Temple Place, Boston, Massachusetts, 02111 • 617-451-2770

serving 101 cities and towns in Metropolitan Boston

August 9, 1989

The Honorable John DeVillars, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

ATTN: MEPA Unit

RE: Saugus River and Tributaries
Flood Damage Reduction Study, EOEA #6497

Dear Secretary DeVillars:

In accordance with the provisions of Chapter 30, Section 62 of the Massachusetts General Laws, the Council has reviewed the Draft Environmental Impact Report.

The DEIR provides information about and discusses possible solutions to the severe coastal flooding experienced in the Saugus River and coastal floodplain during storm events.

The Council believes the DEIR adequately describes environmental impacts associated with recommended mitigation of the flooding. However, there were a number of concerns raised by MAPC representatives. Their comments are attached.

Thank you for the opportunity to comment on this Draft Environmental Impact Report. The Council looks forward to reviewing the Final FEIR on this project.

Sincerely,

David C. Soule
Executive Director

DCS/SJM/mlm
cc: Janette Fasano, MAPC Rep., Saugus
Frank Stringi, MAPC Rep., Revere
Peter DeVeau, MAPC Rep., Lynn
Edmund Tarallo, MAPC Rep., Malden
Robert Hunt, Project Manager, US Army Corps
Sara J. Malone, MAPC Staff

Landuse
(MEPA Ltr)

N.

Metropolitan Area Planning Council

60 Temple Place, Boston, Massachusetts, 02111 • 617-451-2770

serving 101 cities and towns in Metropolitan Boston

DATE: June 20, 1989

I.D. #: DEIR/S-89-39

TO: Edmund Tarallo

COMMUNITY: Malden

Enclosed is a description of the project referenced below.

The Council requests that you consider whether this report adequately describes the project's impact upon your community and addresses significant environmental benefits and potential damages.

PROJECT TITLE: Flood Damage Reduction

THE COUNCIL HAS ONLY 20 CALENDAR DAYS TO FILE COMMENT WITH E.O.E.A. TO MEET THIS DEADLINE, YOUR COMMENTS MUST BE RECEIVED AT THE MAPC BY August 1, 1989

- [x] ADEQUATELY DESCRIBES ENVIRONMENTAL IMPACTS
- [ ] MERITS FURTHER ENVIRONMENTAL STUDY
- [ ] NEED MORE INFORMATION

EXPLANATORY COMMENTS:

SIGNATURE: Edmund V. Tarallo

DATE: 8/4/89

JUN 21 1989

N.

Metropolitan Area Planning Council

60 Temple Place, Boston, Massachusetts, 02111 • 617-451-2770

serving 101 cities and towns in Metropolitan Boston

DATE: June 20, 1989

I.D. #: DEIR/S-89-39

TO: Frank Stringi

COMMUNITY: Revere

Enclosed is a description of the project referenced below.

The Council requests that you consider whether this report adequately describes the project's impact upon your community and addresses significant environmental benefits and potential damages.

PROJECT TITLE: Flood Damage Reduction

THE COUNCIL HAS ONLY 20 CALENDAR DAYS TO FILE COMMENT WITH E.O.E.A. TO MEET THIS DEADLINE, YOUR COMMENTS MUST BE RECEIVED AT THE MAPC BY August 1, 1989

- [x] **ADEQUATELY DESCRIBES ENVIRONMENTAL IMPACTS** (with appropriate mitigation measures implemented.)
- [ ] **MERITS FURTHER ENVIRONMENTAL STUDY**
- [ ] **NEED MORE INFORMATION**

EXPLANATORY COMMENTS:

see attached Comments (SEE CITY OF REVERE, DEPT. OF PLANNING AND COMMUNITY DEV., Letter dated July 25, 1989)

SIGNATURE: Frank Stringi

DATE: 7/25/89

N3

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Metropolitan Area Planning Council

60 Temple Place, Boston, Massachusetts, 02111 • 617-451-2770

serving 101 cities and towns in Metropolitan Boston

DATE: June 20, 1989

I.D. #: DEIR/S-89-39

TO: Janette Fasano

COMMUNITY: Saugus

Enclosed is a description of the project referenced below.

The Council requests that you consider whether this report adequately describes the project's impact upon your community and addresses significant environmental benefits and potential damages.

PROJECT TITLE: Flood Damage Reduction

THE COUNCIL HAS ONLY 20 CALENDAR DAYS TO FILE COMMENT WITH E.O.E.A. TO MEET THIS DEADLINE, YOUR COMMENTS MUST BE RECEIVED AT THE MAPC BY August 1, 1989

- [x] **ADEQUATELY DESCRIBES ENVIRONMENTAL IMPACTS**
- [ ] **MERITS FURTHER ENVIRONMENTAL STUDY**
- [x] **NEED MORE INFORMATION** — Cost impact etc

EXPLANATORY COMMENTS:

I have circulated the draft Environmental Impact Statement / report to:
- the Town Manager
- the Conservation Commission
- the Planning Board
- the East Saugus Waterfront Task Force
- the Town Planner
- the Board of Selectmen, members
- the DPW

for comments.

Attached are the responses. Another broad concern is the cost of the project and the Town's ability to pay as well as not wanting to create "disadvantaged" areas where none exists under the present conditions.

SIGNATURE: Janette Fasano

DATE: 7/26/89

N+

TOWN OF SAUGUS

MASSACHUSETTS

BOARD OF SELECTMEN

JANETTE FASANO, CHAIRMAN
RICHARD J. BARRY
FLORENCE C. CHANDLER
ROBERT J. LONG
PETER MANOOGIAN

27 June 1989

As the M.A.P.C. representative for the Town of Saugus, I have been asked to give comments regarding the "Flood Damage Reduction" project sponsored by the U.S. Army Corpos of Engineers.

Please review the attached draft environmental impact report with your Committee/Department and give me your comments in writing. Comments must be returned to me no later than July 24, 1989.

Thank you for your cooperation.

Sincerely,

Janette Fasano (for)

Janette Fasano, Chairman
Board of Selectmen

Distribution:

Town Mgr.
DPW
Town Planner -
Conservation Commission Chairman .
Planning Board Chairman
East Saugus Waterfront Task Force Chairman
Board of Selectmen

Letter attached:
See Letter from
Town Manager
dated July 25, 1989.

TO: Board of Selectmen ✓

Please let me have your input and comments in writing by 7/24/89.
Thank you.

N/S

At the 7/25/89 BS meeting I asked the Board if they had any additional comments. I only received a copy of the letter. I forwarded the May 8th to the Army Corps of Engineers.

The Commonwealth of Massachusetts
Metropolitan District Commission
M. Ilyas Bhatti, Commissioner

20 Somerset Street
Boston, MA 02108
617-727-5114

The Metropolitan Network of Services

Parks

Beaches

Community Boating

Historic Sites

Recreational Facilities

Public Concerts

Trailside Museum

Boston Harbor Islands

Metropolitan Police

Flood Control

Watershed Management

Pure Water Supply

Quabbin, Wachusett and Sudbury Reservoirs

Franklin Park and Stone Memorial Zoos

Parkway, Boulevard and Bridge System

Charles, Mystic and Neponset Rivers

Beaver Brook, Blue Hills, Elm Bank, Brookhaven, Middlesex Fells, and Stony Brook Reservations

August 5, 1989

Mr. Steven C. Davis, Assistant Secretary
Executive Office of Environmental Affairs
MEPA Unit
100 Cambridge Street - Room 2000
Boston, MA. 02202

RE: Saugus River Flood Damage Reduction DEIR; EOEA #6497

Dear Mr. Davis: Steve

The Metropolitan District Commission (MDC) is pleased to have this opportunity to comment on the above-referenced Draft Environmental Impact Report (DEIR). The project's preferred option includes a total of 3.5 miles of structures including a 1275 foot floodgate structure located at the mouth of the Saugus River, about 700 feet downstream of the General Edwards Bridge. The preferred option also calls for the construction of shorefront protection along Revere Beach, Point of Pines, and Lynn Harbor. It should be noted when reading these comments that the Army Corps of Engineers (ACOE) has requested that the MDC be the State sponsoring agency for this project.

As the project now stands, the MDC feels that both the construction/mitigation measures and the means of implementing this project are inadequate and require extensive changes.

General comments include:

- Is it feasible for the ACOE to spend public monies on the Point of Pines shorefront given that the beach area is not accessible to the public? Has the ACOE met with residents of the area to address this issue? Have residents been informed as to the implications of such a Federal project? 1

- The format of the DEIR makes it difficult to read. The Certificate of the Secretary, for example, is buried in the Planning Correspondence Appendix and is not referred to as a scope for the document in any of its Tables of Contents. 2

MITIGATION

Given the proposal for clam flat mitigation, there are no assurances that the flat will survive. Who will protect from the illegal taking of clams? In addition, the proposed mitigation does not meet Department of Environmental Protection (DEP) criteria of 2:1. Only a 1:1 mitigation has been proposed by the 3

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CORPS RESPONSE

0. 1. Federal expenditures for Shorefront protection around Point of Pines, which ties into the floodgate structure, are necessary to insure structural integrity of the floodgate structure, achieve the benefits stated for the project and for a complete line of protection. This plan produced the highest net benefits and was therefore selected. The Federal Government must assure that the property owners real estate are properly compensated for both the required temporary and permanent easements needed to construct and maintain the measures. The easements are only required for this purpose and not for public access. The Corps has met with residents of Point of Pines on several occasions. Public Workshops were held on 30 June 1988 and 1 August 1989 with advance notices, brochures, displays and slides which were used to describe the project. In addition, from May 1988 to August 1989, three additional meetings were held with the Point of Pines Board of Trustees. During these meetings numerous questions and responses addressed the issue of beach ownership and the implications of a Federal project. See letters "S & T".

0. 2. The combined format of an EIS/EIR does have its complexities, however, it is adequate in fulfilling the outlines and intent of both documents and their legislation. The Certificate of the Secretary also appears in the EIS/EIR.

0. 3. The mitigation will provide habitat and shellfish that will realize the same harvest pressures as the existing resource. See Response J. 11. for a discussion of the 1:1 mitigation goal. All costs for development of the mitigation site, is subject to cost sharing with the local sponsors. The site location has no significant debris problem. Also see project changes.

0. 4. The MDC fishing pier is east of the floodgate structure and not planned to be removed. If in final design, it is determined that the fishing pier interferes with construction or operation of the floodgates and must be removed, the MDC may request an Activity Hazards Analysis to evaluate the use of the floodgate structure for public fishing, or other purposes.

0. 5. As stated in the report, the suitability of the dredged material for use on beaches would be evaluated during design after borings are obtained. If the material is suitable and acceptable, as well as economically feasible to place on beaches, then this use would properly be investigated. The most efficient and environmentally acceptable methods for dredging or excavating the material will be used.

0. 6. The Sales Creek sluice gate on this south end of the Revere Beach Parkway culvert is necessary to prevent ocean waters which overtop Bennington Street from reaching the Garfield School area. As in January 1987, Bennington Street is overtopped starting about a 10 year tidal event with a stillwater tide elevation of about 9 feet, NGVD similar to the minimum elevation of the road. Floodwaters would likely enter the Suffolk Downs area of Sales Creek. This area is outside the study area and would require an extensive investigation and a separate project to keep the ocean's tides from crossing Bennington Street and Route 1A. This is outside the scope of the Saugus River investigation. A relatively

proponent. The proponent must address this discrepancy and who will support the additional cost and planning for the required mitigation. The proposed location and design of the clam flat mitigation assumes an elevation of 9 NGVD which in turn assumes sand fill and trash removal. The proponent should make clear who is to be responsible for this sand and trash removal. 3

Recreational amenities for the project site need to be more adequately discussed. The site is immediately downstream of the MDC fishing pier. Mitigation via replacement should be discussed at greater length. The pier could also provide safe harbor mooring or emergency mooring after structural modifications. Providing a minimal cost recreational benefit by using the barrier itself as a fishing site should also be discussed. 4

TECHNICAL

114,000 cubic yards of dredged material is going to be disposed of at the offshore spoils site. What percentage of this will be sand that could be better used for renourishment of the area beaches, specifically, Lynn, Nahant, or Revere beaches? If feasible hydraulic pumping could save money in the handling and disposal. The proponent needs to discus such measures nmuch more adequately. 5

The DEIR states that there is a need to construct a sluice gate at Sales Creek due to backflow from overtopping at Bennington Street/Sales Creek Pump Station. Is this a truly necessary action? It appears that the problem could be corrected in other ways. 6

Water quality data used for this DEIR is outdated as it is seven years old. More recent (e.g., within the past two years) data should be used. 7

AESTHETICS

The visual impacts of the heavily engineered linear structure will be substantial. Could they be mitigated in part by use of more "natural" material such as stone? The proponent should discuss this option at length. 8

IMPLEMENTATION

Funding for the barrier and other major structures is not currently definite for the MDC. All parties will have to work together to ensure that funds are legislatively mandated. Otherwise, the project is in danger of being halted or changed so substantially as to be ineffective. The proponent must take this into account when designing a timetable for this project. 9

"O2"

inexpensive solution to prevent tides from entering the study area with a sluice gate on Sales Creek at the Parkway was found to maximize net benefits. The sluice gate would remain open at all times until tidal waters begin to backup Sales Creek into the Garfield School area, then closed until tidal flood waters recede.

O. 7. Water quality data in Appendix B of the report are as recent as 1986 and does not result in conclusions significantly different from past studies, indicating that no rapid water quality changes are occurring. The data presented is believed adequate for this report.

O. 8. Adequate visual mitigation has been incorporated into the project design. Additional aesthetic enhancement, archetectural treatment and landscaping would be accomplished in final design.

O. 9. The local communities are fully aware of the need to support the MDC in funding the project through the State legislature. Letters from the communities have provided this assurance to support the MDC in this request for funding. Coordination during design would assure the time table is known to the MDC and communities.

O. 10. On 27 September 1989, representatives of the MDC, the Corps and Department of Environmental Protection met to discuss additional measures for protecting the estuary storage area. In addition, as a result of the meeting and following requests from MDC staff, a full time Environmental Manager and legal costs to assist communities and MDC was included in the operation and maintenance cost of the project. Subsequently, the decision was made to acquire the estuary storage area in order to provide the highest degree of protection possible.

The local assurances will clearly delineate the areas of responsibility in enforcing wetland and floodplain regulations. At the request of the MDC, the four communities have provided letters of assurances for those items which are not totally within control of the MDC.

While the Corps of Engineers prefers a single-party agreement, ER 1165-2-131 does not rule out multi-party agreements when conditions warrant it. There are several options available for accommodating MDC's concerns.

Local assurances require compliance with FEMA zoning which restricts construction of buildings first floors and basement levels to above the 100 year base flood level. A floodplain management plan is required by the assurances. The assurances will also require compliance with both the Operation and Maintenance Manual and Gate Regulating Manual to be prepared by the Corps.

O. 11. See General Response #1 on Protection of the Estuary Storage area.

OA. 1. See Response 0.10.

OB. No response required.

In order for this proposal to function properly and without significant damage to the environment and disruption of the marsh ecosystem, protection of the salt marsh must be insured. This requires coordination of regulatory enforcement among four communities. As currently proposed, the "protection plan" relies on regulatory oversight authority with which this agency is not empowered. A more realistic protection plan must be developed with all measures for protection and responsibilities among the four communities and the state sponsor clearly delineated. All affected parties must be signatories to any sponsorship agreement or protection plan. Inherent within such an agreement must be the following measures: 10

(1) A prohibition on building below the elevations stated in the DEIR.

(2) A floodplain management plan.

(3) A tidegate maintenance plan that facilitates wetlands protection.

Without a realistic, enforceable protection plan, one can foresee the use of the flood gates as rationalization for additional filling (hence the measures above). The flood gates are necessitated, in small part, due to the effects of rising sea level but in major part, due to the effects of loss of estuary and marsh. Active, aggressive marsh reclamation should be incorporated into the operations and protection plan with a goal of minimizing the future incidence of gate closings. 11

The ACOE could look to the precedent set by the Charles River Naturalized Storage Program as an example of a non-structural approach to flood control. A project which utilizes such an approach would be beneficial to all concerned and would accomplish many of the goals stated above.

Thank you for this opportunity to comment.

Sincerely,

M. ILYAS BHATTI,
Commissioner

MIB/DQ

cc: N. Baratta
J. Orfant
P. DiPietro
S. Ivas

"O"

The Commonwealth of Massachusetts
Metropolitan District Commission
M. Ilyas Bhatti, Commissioner

20 Somerset Street
Boston, MA 02108
617-727-5114

The Metropolitan Network of Services

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Charles, Mystic and Neponset Rivers

Beaver Brook, Blue Hills, Elm Bank, Breakheart, Middlesex Falls, and Stony Brook Reservations

September 5, 1989

Colonel Daniel M. Wilson
Division Engineer
U.S. Army, Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254-9149

Dear Colonel Wilson:

I am writing to express the Metropolitan District Commissions' support as the Commonwealth's designated local sponsor for the Flood Damage Reduction Project, Saugus River and Tributaries, Lynn, Malden, Revere and Saugus. The detail of which are contained in previous studies and reports dated June 1989 and furnished to this Agency. This project would provide a high level of coastal flood protection to the 5000 buildings and the 400,000 residents, employees and commuters in this region which is frequently threatened and flooded from tidal storms. The project would also protect major industries, utilities, transportation arteries, recreational facilities, a valuable salt water estuary, navigation fleet and other resources important to Boston and the north shore.

We have also reviewed the preliminary draft Local Cooperation Agreement and intend to sign the agreement when our concerns are fully addressed. It would be impossible for this agency to enforce sole responsibilities, as stated in our meeting on August 16, 1989. Therefore, details for the delineation of responsibilities must be clearly written into the agreement along with the signatures of each involved commmunity namely; Lynn, Malden, Revere, and Saugus. Areas of jurisdiction and mirrored obligations requiring clarification are flood plan information, enforcement of encroachment regulations, future development restrictions, state and local maintenance requirements, easements and flood storage protection.

CA,

We understand that a final Local Cooperation Agreement will be required after the Report is aproved by the Chief of Engineers. The project is authorized by the U.S. Congress and the completion of plans and specifications should take approximately four years. At that time, a final estimate of project costs and cost sharing amounts will be prepared. The MDC will request funds from the Legislature to meet the State's cost share. Construction is currently schedule to start in Fiscal Year 1994.

As the State's local sponsor we would be required to provide cash contributions estimated at $24,000,000. We must also provide the real estate and relocation requirements. Additionally we understand that an estimated $325,000 per year operation and maintenance cost would be a continuing non-Federal responsibility following completion of the project.

I am looking forward to working with you on this critically needed project.

Sincerely yours,

M. Ilyas Bhatti, P.E.
Commissioner

PJD/eg

cc: N. Baratta
F. Faucher
C. Terzian
A. Jewett

OA2

The Commonwealth of Massachusetts
Metropolitan District Commission
M. Ilyas Bhatti, Commissioner

20 Somerset Street
Boston, MA 02108
617-727-5114

The Metropolitan Network of Services

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Franklin Park and Stone Memorial Zoos

Parkway, Boulevard and Bridge System

Charles, Mystic and Neponset Rivers

Beaver Brook, Blue Hills, Elm Bank, Breakheart, Middlesex Falls, and Stony Brook Reservations

October 27, 1989

Colonel Daniel M. Wilson
U.S. Army Corp of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02259-9149

RE: Flood Damage Reduction Project - Saugus River Tributaries

Dear Colonel Wilson:

This is to clarify the MDC's position with regard to funding of the Saugus River project. The MDC will request funds from the Legislature to meet the State and local cost share once the estimates for the project are developed.

I hope this clarification meets your needs.

Sincerely,

M. Ilyas Bhatti
Commissioner

NDB/cmf

cc: F. Faucher
C. Terzian
H. Higgot

OB

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

Richard Cronin, *Director*

July 18, 1989

Mr. Joe Horowitz
Department of the Army
New England Division
Corps of Engineers
427 Trapelo Road
Waltham, MA 02254-9149

Dear Sirs:

The Division of Fisheries and Wildlife wishes to express its concern over the proposed Saugus River Flood Damage Reduction Main Report (June 1989). The proposed project (option 3) will increase the value of protected areas, encouraging further development of the area and provide windfall profits to existing landowners. In light of this, we believe protective retaining walls should be built on upland sites instead of tidal and subtidal areas. We believe the Corp has underestimated the value of the tidal and subtidal areas in calculating cost:benefit ratios. 1 2

We believe success or failure of mitigative measures should be determined prior to destruction of existing habitat. By waiting 4 years before determining success or failure, irrepairable damage may be done to existing biota. The The EIS (EIS-36) clearly indicates there is no basis for projecting successful mitigation. 3

After 20 years of working with wintering black ducks in the Lynn Harbor area, I have no reason to believe black ducks will utilize riprapping for food supplies. 4

We are also concerned that the proposed Option 3 will increase pressure to dredge the Pine and Saugus Rivers to provide moorings for boats escaping storm damage behind the protective flood gates. This will result in additional wetland and tidal land losses not projected in the report. 5

Sincerely,

HW Heusmann

H W Heusmann
Waterfowl Biologist

HWH/mh

P

Field Headquarters
Westborough, Massachusetts 01581 (617) 366-4470
An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

CORPS RESPONSE

P. 1. See General Response #1 regarding estuary protection and development.

P. 2. See General Response 3. Mitigation goals were described using habitat unit values. Direct monetary values (NED resources) were provided for information. The Environmental Quality (EQ) resources were adequately mitigated see also Response E.9.

P. 3. The proposed mitigation relies on natural recolonization of constructed habitat after the substrate attains its physical equilibrium The Corps nationally has successfully mitigated habitat impacts through compensation that minimizes habitat value losses. The Corps is confident in the projected success of the mitigation area and only proposes the 4-year post-implementation survey as a safeguard.

P. 4. The anticipated colonization at the base of the rip-rap by mussels in the lower intertidal areas is the forage habitat referenced here.

P. 5. The future without project conditions are clearly stated. The proposed project should not alter the existing probability of these areas to be dredged. The ACEC requirements provide strict controls over dredging new areas.

Q. 1. See General Response #4, and E. 11.

Q. 2. The analysis conclusions in the hydrology and hydraulics Appendix does not anticipate Option 3 operation to measurably alter estuarine dynamics under existing sea level conditions and the anticipated 0.8 foot rise. The square foot area of flushing is, in fact, slightly larger (500 ft^2) than the existing constriction west of the General Edwards Bridge. Therefore resource recruitment will not be adversely impacted. See also General Response #4 for accelerated sea level rise discussions and E. 11.

Q. 3. Smelt spawning areas (immediately above the salt-wedge) will not be impacted since estuarine dynamics will be preserved.

Q. 4. See General Response #4.

Q. 5. We appreciate this comment and used this same rationale to predict a successful mitigation plan.

Q. 6. Shellfish populations have prospered in the seaplane Basin which was originally constructed by dredging wetlands. Since the present shellfish populations have colonized this artificially dredged area, it is highly probable that the adjacent mitigation area will support similar densities. As discussed in General Response #3, no significant impact occurs in Lynn Harbor.

Q. 7. The Feasibility Report statement that no known significant adverse impact will result is referring in context to impacts that have not been mitigated (minimized). The function of the Environmental Impact Statement is to clearly disclose that a decision must be made weighing impacts to the human environment versus flood damage reduction. See also responses E. 13. and E. 14.

The Commonwealth of Massachusetts
Division of Marine Fisheries
Leverett Saltonstall State Office Building
100 Cambridge Street
Boston, Massachusetts 02202
727-3193

PHILIP G. COATES
DIRECTOR

August 3, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, MA 02254-9149

Dear Mr. Wilson:

The Massachusetts Division of Marine Fisheries has reviewed the Draft Environmental Impact Statement/Report for Flood Damage Reduction in the Saugus River and Tributaries. The evaluation focused on the potential of the Regional Saugus River Floodgate Plan (Option 3) to adversely impact the estuarine ecosystem. Option 3 proposes to construct 3.5 miles of structures within the study area, including a floodgate at the mouth of the Saugus River. Three potential impacts were identified as major concerns to the interest of protecting marine resources in the study area: alterations in estuarine hydrology, impact to anadromous and migratory fish, and loss of shellfish habitat.

Alterations in Estuarine Hydrology

Option 3 is projected to reduce estuarine flushing less than 0.1 percent, eliminate tides above 8.0 feet (maximum predicted astronomical high water is 7.5 feet NGVD), and produce navigation gate velocities that are slightly higher than found presently. If these conditions are met, along with a navigation gate design that does not promote larval fish impingement, adverse impacts to resident and migratory fish would be minimized.

Complicating the forecasting of estuarine impacts is the unclear magnitude of future sea level rise. The projection with current sea level conditions for two or three navigation gate closures (of one or two hours) per year should not adversely impact finfish or shellfish larvae transport. Forecasting a conservative rise of one foot/100 years would lead to approximately 40 closures per year for two or three hour durations. If gate closures are

Q.

dramatically increased over time, natural estuarine flushing could be altered, leading to disruption of behavioral patterns of migrating fish. It is also a concern that increased gate closures may lead to temporary reductions in water quality as pollutants are concentrated behind closed gates. 1

Impacts on Anadromous and Migratory Fish

The Option 3 design of a 100 ft. navigation gate and ten 14' x 50' flushing gates should not significantly impact adult finfish movement. There is reason to be concerned over the potential impacts to early life stages of finfish and shellfish. Commercially important species depend on the characteristic hydrographic conditions found in estuaries. Any change in the physical interaction between tidal flux and the seaward movement of estuarine waters could lead to behavioral responses that negatively impact resource recruitment. It is still unclear to what extent Option 3 will effect the passive export of larvae out of the estuary under existing sea level conditions. The potential for adverse impacts is expected to increase under forecasted conditions of sea level rise that require more gate closures. 2

Anadromous rainbow smelt (Osmerus mordax) spawn in Shutes Brook and in the Saugus River near the Saugus Iron Works. The habitat they utilize is limited to less than 50 meters of stream bed in the vicinity of the maximum extent of tidal influence. Peak spawning activity coincides with the highest tide elevations, and spawning success is related to the dynamics of tidal and watershed flushing. The smelt population of the Saugus River is well below historical levels. Any development that may disrupt the smelt's reproductive ecology should be avoided. 3

Although the Army Corps has made practical and responsible attempts in designing the Regional Floodgate Plan to minimize immediate physical impacts to fishery resources, the question of broad ecological impacts remains. We are concerned with the potential for long-term ecological impacts on anadromous and migratory finfish, as rising sea levels alter conditions projected under Option 3. 4

Loss of Shellfish Habitat

Construction impacts under Option 3 will result in the loss of 9.4 acres of intertidal habitat that contain significant concentrations of soft shell clams (Mya arenaria). Mitigation of this impact is proposed through creation of shellfish habitat by removal of I-95 fill embankment near the Sea Plane Basin. Twenty years ago, portions of these flats contained abundant shellfish resources, and were routinely harvested by commercial diggers. 5

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Current DMF management objectives for the Lynn Harbor and Saugus River area include the restoration of these shellfish resources. The destruction of 9.4 acres of shellfish habitat would be an unnecessary and avoidable impact created by the Regional Floodgate Plan. As a policy, DMF does not condone the destruction of shellfish habitat under any circumstances. Intertidal habitats have been destroyed through urban development for decades without regard for the irreversible loss of shellfish resources. Shellfish mitigation attempts to date have been largely unsuccessful, and represent an unacceptable alternative to objectives of no habitat loss. 6

In summary, the Massachusetts Division of Marine Fisheries does not concur with the Feasibility Report statement that no known significant adverse environmental impacts will result from the Regional Floodgate Plan. There is some uncertainty over the potential for future hydrological changes adversely impacting early life stages of anadromous and migratory species, but the loss of 9.4 acres of shellfish habitat is an unacceptable impact. Therefore DMF does not support the Army Corp recommendation for Option 3, the Regional Floodgate Plan. DMF supports the use of non-structural measures to reduce tidal flood damages, as represented in Option 2, including floodplain land acquisition and enhancement of Pines River flushing by breaching the I-95 fill embankment. Further investigations may reveal a combination of non-structural measures and upland dikes and revetments along Lynn Harbor and Revere Beach would provide adequate flood damage protection while avoiding unnecessary environmental impacts. 7

Sincerely,

Philip G. Coates
Director, DMF

cc: Mr. David Shepardson, MEPA
Mr. Mike Tehan, USFWS
Mr. Chris Mantzaris, NMFS
Mr. Leigh Bridges, DMF
Mr. James Fair, DMF

PGC:BCC

Q3

CORPS RESPONSE

QA. 1. The need for the sluice gate on the Sales Creek Culvert which passes under Revere Beach Parkway is to prevent coastal flooding in Suffolk Downs area from flooding the Garfield School area. Tidal flooding in the Suffolk Downs area and Sales Creek starts when the ocean's tides in Belle Isle Inlet begin to overtop Bennington Street near the Pump Station. As occurred in January 1987, tides overtop the street at about a 10 year tide event with a stillwater tide elevation of 9 FT. NGVD, similar to the minimum road elevation. The pumping station is not designed for pumping out ocean overtopping volumes which begin when tide levels exceed a 10 year tide frequency.

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Management

DIVISION OF WATERWAYS

100 Cambridge Street
19th Floor
Boston, MA 02202
(617) 727-8893

349 Lincoln Street
Bldg. #45
Hingham, MA 02043
(617) 740-1600

August 29, 1989

Army Corps of Engineers
424 Trapelo Road
Waltham, Mass. 02254

RE: REVERE - Sales Creek
Contract No. 3199-D
U.S. Army Corps of Engineers
Flood Damage Reduction
Feasibility Report and Draft
Environmental Impact Statement/
Report

Dear Sir:

ATTN: Dave Killoy

The Division of Waterways is currently designing a project in Sales Creek in Revere.

Our consultant Seelye, Stevenson, Value & Knecht was asked to review your EIR/EIS. They need more information about the tide gate installation on Sales Creek at the Revere Beach Parkway location. The report mentions the need for the installation of tide gates at various locations, however, a more detailed explanation and justification for this plan is required in view of a fully automated and working flood control pumping station on the same waterway.

Very truly yours,

Eugene P. Cavanaugh
Director

KBM: DSB:mc

SEP 6 1989

QA

THE CITY OF
REVERE, MASSACHUSETTS

OFFICE OF THE MAYOR
CITY HALL

GEORGE V. COLELLA
MAYOR

July 25, 1989

Colonel Daniel M. Wilson
Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02254-9149

Dear Colonel Wilson:

The City of Revere strongly supports the general principle and concept of the Regional Saugus River Floodgate Plan because of the very high level of coastal flood protection it provides to the Kelley Meadow, Oak Island, Revere Beach, Point of Pines, Riverside, Lower Revere Street, North Revere and the Pines and Saugus River areas. However, the details of the location of the floodgate structure within the Point of Pines area of the City must be closely examined to insure minimal disruption of the upper beach and tidal area at the mouth of the estuary. Also, the City supports non-structural flood protection measures along the ocean front of the Point of Pines such as dune restoration and sand replenishment in lieu of an armor stone revetment.

I intend to request the state legislature to fund the project at the appropriate time currently scheduled for 1994. When the non-Federal sponsor, the MDC, is called upon to meet the items of local cooperation, the City would be prepared to agree to those items not within the direct control of the MDC including, for example, continued participation in the Flood Plain Management and Insurance Programs and enforcement of wetland laws for protecting the estuary storage area as required in the local cooperation agreement. Also, the city would continue to maintain its existing project-dependent shorefront structures, such as the Diamond Creek and Towle area tide gates.

R.

The City will continue to work with the Corps to insure that the proper mitigation measures are built into the design in order to provide the highest degree of flood protection with the least degree of environmental and social impact.

Sincerely,

George V. Colella
Mayor

cc: MDC Commissioner, Illyas Bhatti
David Shepardson, MEPA Unit

R2

CORPS RESPONSE

R. 1. The floodgate structure's location has been revised as shown in "Project Changes" which also accommodates Revere's concern. As stated in the report the option of using a dune/beach system in lieu of all or part of the revetments at Point of Pines will be investigated in design.

RA. Coordination with the communities will continue throughout the Preconstruction, Engineering and Design phase.

RB. The information developed for the Regional Project will be available to the MDC when they resume final design of the Town Line Brook flood control project.

City of Lynn, Massachusetts
Office of the Mayor

JEFFERY J. HAYWARD
CHIEF OF STAFF

JOANNE C. DEVEAU
ADMINISTRATIVE ASSISTANT

Albert V. DiVirgilio
Mayor

CITY HALL 01901
(617) 598-4000

October 23, 1989

Colonel Daniel M. Wilson
Division Engineer
New England Division, Corps
of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Colonel Wilson:

The City of Lynn remains in favor of the Regional Saugus River Floodgate Plan as the preferred alternative to protect our coastal area from flood damage. It is the City's intent to support the role of the Metropolitan District Commission, acting as the local sponsor, in petitioning the State legislature for funding of the non-Federal cost of the project, at the appropriate time.

The City of Lynn recognizes its responsibility to adhere to the following obligations as they are essential to the high degree of protection provided by the regional plan:

1. To continue to participate in and comply with the applicable Federal Flood Plain Management and insurance programs.

2. To enforce all wetlands laws and regulations to ensure the preservation of flood storage volume within the Saugus River estuary system.

3. To ensure the maintenance of existing project dependent seawalls and associated protective structures, including those located along Lynn Harbor, the Saugus River, and the Saugus River tributaries.

RA,

Due to the potential impact that the floodgate and associated structures could have on the revitalization of the Lynn Harbor area, the City requests direct coordination with the Corps of Engineers throughout the Preconstruction, Engineering, and Design (PED) phase of the project.

Sincerely,

ALBERT V. DiVIRGILIO
MAYOR

AVD/jlc
cc: Robert Hunt

RA 2

City of Malden
Massachusetts

OFFICE OF THE MAYOR
200 PLEASANT STREET
MALDEN, MASSACHUSETTS 02148
(617) 397-7000

JAMES S. CONWAY
MAYOR

October 24, 1989

Colonel Daniel M. Wilson
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Colonel Wilson:

Re: Feasibility Report and Draft Environmental Impact Statement and Report/Saugus River and Tributaries/Flood Damage Reduction Study

As Mayor of the City of Malden, I wish to express my support for the Regional Saugus River Floodgate Plan, which will provide flood protection for the communities of Malden, Revere, Lynn and Saugus. Even though no tidal wetlands are present within Malden's city limits, hundreds of commercial, residential, and public structures in the eastern sector of the city are impacted by storms producing both coastal flooding and significant freshwater runoff. Construction of the Saugus River flood control structure and associated improvements will eliminate the threat from tidal surges, while at the same time, with the gates closed prior to high tide, vastly improve the flood storage capacity of the seaplane basin and adjacent marshes.

Malden's support for the Regional Saugus River Floodgate Plan is based on the level of coastal flood protection it would provide to hundreds of commercial, residential and public buildings in the Town Line and Linden Brook areas of Malden.

RB,

I intend to request the state legislature to fund the project at the appropriate time currently scheduled for 1994. When the non-Federal sponsor, the MDC, is called upon to meet the items of local cooperation, the city would be prepared to agree to those items not within the direct control of the MDC including, for example, continued participation in the Flood Plain Management and Insurances programs and enforcement of wetland laws for protecting the storage areas, as required in the Local Cooperation Agreement.

I have been advised however that should this project move forward, it would appear to make the proposed MDC Town Line Brook flood control project unnecessary. Opening of all spans of the Town Line Brook culvert under Route 1 would undoubtedly exceed the capacity of any proposed pump system, and would to a large extent eliminate the accumulation of debris which now severely reduces the capacity of the brook at this location. Money which would be spent on the MDC facility might be applied toward the State's share for the Saugus River project. Cooperation between the Corps and the MDC is crucial towards a cost effective solution to this flooding problem.

Sincerely,

James S. Conway

James S. Conway
Mayor

JSC/bt

RB2

The City of Revere Massachusetts

City Council
4 PUTNAM ROAD
REVERE, MA 02151
289-6444 286-2321

JOHN ARRIGO
COUNCILLOR

August 4, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, MA. 02254-9149

Reference: EOEA File #6497

Dear Colonel Wilson:

As the City Councillor representing the Point of Pines, Riverside, Oak Island, Kelly Meadows, and a portion of Revere Beach Boulevard, I am very supportive of the overall plan and concept of the Regional Saugus River Floodgate Plan as described in EOEA File #6497. As outlined, protective measures must be taken to prevent the devastation of previous years when coastal storms ravaged the low-lying areas of Malden, Lynn, Saugus and Revere.

My main concern, at this time though, is for the impact such a proposal may have directly upon the Point of Pines Area, itself. Through conversations and meetings held with residents of the Point of Pines, I would like to offer the following comments, and would appreciate as many mitigating measures to be taken to insure as little adverse impact as possible.

- First and foremost, the Point of Pines Beach must be retained under the control of the Point of Pines Beach Association, as they have always made certain to maintain and preserve their coastal area to the highest standards. (easements can be granted for maintenance) | 1

- Would like to see the new proposal with <u>no dike</u> and a continuation of the wall with heavy landscaping from the floodgates to the Rice Avenue Area. | 2

- Would like to see a new alignment closer to the pumping station so that as little as beach area would be lost. (might be advisable to remove the bend to Witherbee Ave. and continue straight) | 3

- Sand dunes reconstructed without structural revetment underneath. (All sand replenishment) | 4

- Extensive landscaping and dune grass replenishment along | 5

S,

CORPS RESPONSE

S. 1. See Response 0.1.

S. 2. See Response R.1.

S. 3 See Response R.1.

S. 4. See Response R.1.

S. 5. The project will be landscaped in accordance with good engineering practices. Details developed in design would be coordinated with the non-Federal sponsors. Dune grass is required in the project for stabilization of the dunes.

S. 6. Although not currently required at Point of Pines, the quality of any outside source of sand for beach or dune use would be coordinated with the community. Final selection will be based on cost considerations as well as local desires.

S. 7. FEMA would make the final determination on the need for flood insurance. This would likely take place following project completion and a request from the community to FEMA.

S. 8. See Response J.1. The MDC has indicated in several meetings that they intend to establish an escrow account with upfront funding of O&M.

S. 9. During design, project haul routes would be properly coordinated with resident safety being a major objective.

S. 10. Major construction activities are planned for regular working hours, i.e., 8 hours per day and 5 days per week.

S. 11. Corps of Engineers inspectors would be assigned to oversee construction and would be available along with the Corps' project manager for public inquiries. The MDC intends to have a full time person assigned for the O&M of the project.

S. 12. Other than restrictions identified with the project along the Saugus River at Point of Pines, no other wall raisings are anticipated.

S. 13. Notices to residents on construction time tables can be provided through a continuing Public involvement process.

S. 14. See Responses J. 7 and J. 8. and General Response #1.

S. 15. Delineation of the wetland boundary would be provided to the Conservation Commissions and others.

S. 16. The maintenance of existing project dependent structures, such as tide gates, must be maintained by the non-Federal sponsors as part of the Local Cooperation Agreement.

S. 17. See Response S.16.

S. 18. Protection of the estuary storage area is a requirement of the Local Cooperation Agreement. See General Response #1.

The City of Revere Massachusetts

City Council
4 PUTNAM ROAD
REVERE, MA 02151
289-6444 286-2321

JOHN ARRIGO
COUNCILLOR

the entire project. (Especially along the wall or dike to lessen the visual impact on the beach area) 5

- If an outside source of sand replenishment is necessary, the quality of the sand should be with the approval of of the residents. 6

- Written assurance that flood insurance will no longer be required by the residents. 7

- A strict maintenance and operational plan be established and monitored by the Army Corps to be certain that the state agency which is in control adheres to all requirements. An escrow account be established to cover all costs of maintenance, so the appropriate funds are available each year to maintain this project in the best of condition. 8

- If heavy construction equipment and/or vehicles need to travel the streets of the Point of Pines during construction phases, routes of travel should be documented and approved of by the residents, beforehand, to insure all safety precautions will be taken. 9

- No "around-the-clock"construction at any time. No operation of heavy equipment or pile driving before 9AM, nor later than 5PM. 10

- An accessible line of communication to address any immediate concerns of the residents during all phases of construction and operation. 11

- Strict assurances that no additional wall structures will block the view of the beach. 12

- Periodic notices sent to Point of Pines residents notifying them of construction phases to be done, and a general timetable and scheduling outline, previous to and during construction of the project. 13

Persuant to the overall project other concerns I have are:

- There will be no ecological change in our wetlands that might induce development. 14

The City of Revere Massachusetts

City Council
4 PUTNAM ROAD
REVERE, MA 02151
289-6444 286-2321

JOHN ARRIGO
COUNCILLOR

- The delineation of the entire wetlands accurately, and the distribution to all the cities and towns the appropriate maps and information. 15
- The upgrading of all outfalls and tidal gates along North Shore Road from Butler Circle to the Point of Pines to make certain all ponding areas will adequately drain. 16
- The inspection and repair, if necessary, of the floodgate under the B & M Railroad bed between Oak Island and Revere Street. 17
- The assurance that all infractions pertaining to the illegal fill of the wetlands will be strictly dealt with. 18

Hopefully, these comments will be taken under consideration and measures will be taken, if not already done so, to address these concerns.

Sincerely,

John R. Arrigo
Revere City Council

cc: D. Shepardson, EOEA/MEPA
Commissioner I. Bhatti, MDC
Mayor Colella
Senator Doris
Representative Reinstein
F. Stringi, Planning
R. Hunt, Army Corps

S3

The City of Revere Massachusetts

City Council
34 HARRINGTON AVENUE
REVERE, MA 02151
289-6912

LINDA SANTOS ROSA
COUNCILLOR

August 10, 1989

To Distribution:

The following comments and concerns are those expressed to the Project Manager, Robert Hunt on the Flood Damage Reduction Report over the years.

As in the past all of the conversations held with Mr. Hunt, my main concerns were the great impact on the small residential area of the Point of Pines in the city of Revere. While keeping in mind the importance of this area from flooding, another major concern is the Point of Pines will have the greatest impact. In my opinion there will be additional amounts of traffic during construction, when and if this should be adopted. The streets in the Point of Pines are not only densely populated with homes, but with our children, as well. 1

Again, to reiterate my thoughts, the most affected by this plan is this small area of the Point of Pines. This area will be most affected by all the traffic, all of the construction, all of the aesthetics, and of course, all of the water in high tides when these gates located at the Point of Pines are designated to be closed, they will be closed at this location. Another important concern, probably the most important will be the agency that will be responsible for these flood gates in times of emergency. As of this date in time, the Metropolitan District Commssion (M.D.C.), the agency that will be responsible for the flood gates in times of emergency, are being considered to control these gates. The people of Revere are too familiar with the track record of this agency. We have in Revere pumping stations that are in disrepair and when called upon in times of emergency, the people who are in the positions of responsibility are not responding in an immediate fashion. 2

To emphasize my concerns and comments, as stated before, yes, we in Revere need protection from major storms and would welcome a plan that would guarantee us this, but the plan before us appears to guarantee protection to Lynn, Malden and Saugus, but those same guarantees are not afforded to the Point of Pines; but again all of the burdens of traffic, construction, maintenance, control, water and aesthetics remain in the Point of Pines. 3

Before closing, I would like to recommend that a plan of this nature should be considered to give the city of Revere a tax break over the years, if adopted, for all of the concessions that will be given by Revere. 4

T.

CORPS RESPONSE

T. 1. See Responses S.9, S.10 and S.11.

T. 2. See Response J.1.

T. 3. The project provides a high degree of protection against a recurring 1978 100-year storm to residents of Point of Pines and reduction of flooding to events more severe than 1978.

T. 4. A tax break for Revere can be a consideration for the Massachusetts legislature, however it is not within the authority of the Corps of Engineers or MDC. The project should result in considerable savings to Revere in the protection of Revere's residents, businesses and infrastructure.

U. 1. See Response 0.1.

U. 2. See Response S.5. Crossovers of the dunes, walls and revetments around Point of Pines are included in the project to maintain beach access while providing protection to the vetetation of restored dunes.

U. 3. As stated in the report, a sand dune/beach system would be investigated during design at Point of Pines in lieu of all or part of the revetments.

U. 4. See Response R.1.

U. 5. See Response J.1.

V. 1. See Responses R.1 and U.3.

W. 1. See General Response 1. and Responses J.7 and J.8.

X. 1. See General Response 1.

X. 2. See Response 0.1.

X. 3. See Response R.1.

X. 4. See Responses J.7 and J.8.

Y. No Response Required

Z. No Response Required

At this time, I personally would like to thank Robert Hunt of the Corps of Engineers for all those times, including nights he gave to come to Revere and the other surrounding cities and towns to have all interested parties base their concerns.

In closing, my comments and concerns are not only given by me as a Councillor-at-large, but as a homeowner and taxpayer of the city of Revere and resident of the Point of Pines, and whose child is one of those children who plays in this area.

Again, I thank all parties for all of their efforts in bringing a plan of this nature to Revere and this region and I look forward to working to improve this plan so that we in Revere will benefit as much as those in Lynn, Malden and Saugus.

Sincerely,

Linda Santos Rosa

Linda (Santos) Rosa
Councillor-at-large

cc : distribution
(NOT Attached)

T2

Department of Planning and Community Development

Frank L. Stringi
Director

City of Revere
Massachusetts

George V. Colella
Mayor

July 25, 1989

Steven Davis, Director
MEPA Unit
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

RE: Draft EIR, Saugus River and Tributaries
Flood Damage Reduction Study

ATTN: MEPA Unit

Dear Mr. Davis:

This office has completed its review of the above referenced Draft EIR and offers the following comments:

The Regional Floodgate Plan, as proposed, with associated shore front protection in the Point of Pines and Revere Beach appears to provide the highest level of flood protection to the Point of Pines and back shore areas of Revere, Malden, Saugus and Lynn. Although such a plan provides the highest benefits on a regional scale, it also creates a substantial level of impact to the Point of Pines community. For this reason, the following mitigation measures should be incorporated into the plan:

- That the Point of Pines beach be retained under the Point of Pines Beach and Conservation Association control for the purpose of preserving an environmentally sensitive coastal resource. 1

- That extensive landscaping be provided to buffer the visual impacts of the floodgate structure from adjacent residential properties and that walkways be constructed to improve access to the shorefront along Rice Avenue adjacent to the shoreline protection. 2

U.

- That alternative flood protection measures which are non-structural be explored along the shore front area of the Point of Pines, such as dune restoration and sand replenishment in leiu of the proposed armor stone revetment. 3

- That the width of the earth dike which ties the floodgate structure into the Point of Pines shoreline be minimized as not to jeopardize the usefulness of the beach area and minimize disruption of the upper beach and tidal areas. 4

- That a strict maintenance and operational plan be established for the proper management of all the features of this plan. 5

Sincerely,

Frank Stringi

Frank Stringi
DPCD Director

4z

City of Revere Massachusetts City Hall
281 BROADWAY
REVERE, MA 02151
284-3600

Revere Beach Citizens Advisory Committee

July 31, 1989

Colonel Daniel M. Wilson
Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, MA 02154-9149

Dear Colonel Wilson:

The Revere Beach Citizen's Advisory Committee supports the Regional Saugus River Floodgate Plan as a whole, however some concern exists regarding the actual placement of the floodgate structure. While we agree that the plan does provide a high level of flood protection to Kelly's Meadow, Oak Island, Revere Beach, Point of Pines, Riverside, Lower Revere Street, North Revere and the Pines & Saugus River area, all efforts must be made to keep disruption of the upper beach and tidal area at the mouth of the estuary to a minimum. Any non-structural flood protection measures such as restoring the dunes and replenishing the sand along the Point of Pines ocean front will receive our support as well.

Very truly yours,

Ellen M. Haas

Ellen Haas
Chairperson

V

OAK ISLAND RESIDENTS ASSOCIATION

c/o 5 Oak Island Road, Revere, Massachusetts 02151

August 2, 1989

Colonel Daniel M. Wilson, Divison Engineer
U.S. Army Engineer Divison, New England
424 Trapelo Road
Waltham, MA 02254-9149

Dear Colonel Wilson:

RE: EOEA 6497 - SAUGUS RIVER
FLOOD DAMAGE REDUCTION STUDY

The members of our organization have been interested in and supportive of Option 3, Regional Saugus River Floodgate Plan, since becoming aware of the Flood Damage Reduction Study. In our opinion, this option is the most acceptable both from a flood protection and environmental standpoint.

We are obviously concerned about flood protection. However, our primary concerns from the outset have been the protection of the estuary and changes which could occur in the dynamics of the estuary as a result of floodgate construction. The ecological balance of the estuary must be maintained in order to preserve the plant and animal life reliant on this area. Additionally, any change in the ecology or flood plain boundary could serve to encourage future development which would have the same negative result on the estuary. 1

After reviewing the Feasibility Report and Draft Environmental Impact Statement/Report we continue to be supportive of this project. We also see residual benefits should the project be undertaken. Those benefits include "strict enforcement of modified flood plain zoning along the borders of the estuary"; "providing maps requested by Conservation Commissions, available points of contact, additional technical assistance, community education and other measures designed to facilitate protection of

AUG 4 1989

W.

the estuary storage area and implementation of wetland regulations."

We strongly urge that the Regional Floodgate Project be allowed to proceed and the design phase begin without delay.

Very truly yours,

Rose A. LaQueglia
President
OAK ISLAND RESIDENTS ASSOC., INC.

cc: EOEA Secretary J. DeVillars
MDC Commissioner I. Bhatti
EOEA/MEPA Unit - D. Shepardson
Congressman E. J. Markey
Senator F. D. Doris
Representative W. Reinstein

W.

PINES RIVERSIDE ASSOCIATION

21 RIVER AVE
REVERE, MASSACHUSETTS 02151

August 3, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

RE: Flood Damage Reduction, EOEA# 6497

Dear Colonel Wilson:

As members of the Saugus River, Flood Damage Reduction Study - Steering Committee, we would like to make the following comments on the Draft Environmental Statement/Report:

We feel the Regional Floodgate Plan provides the highest level of flood protection with the least amount of environmental impacts. We feel it is a project of merit and of necessity due to the rising sea level, however we do have a few concerns:

1) The floodgates should not allow any encroachment on the Rumney Marshes, which have been designated, an area of critical environmental concern. This esturine system is too valuable to have any more lost to development. | 1

2) Because of the environmentally sensitive dune system proposed at the Point of Pines Beach, this beach should remain in the control of the Point of Pines Beach and Conservation Associations. To remove it from their control could prove to be detrimental. | 2

3) We also support the residents of Point of Pines that a wall should be considered to tie the floodgate structure into the Point of Pines Beach, instead of such a large earth dike. We also support the tying in of this structure further west by the pumping station as to minimize the disruption of the beach. | 3

We insist that the total floodgate project have no adverse impact to this natural esturine system. | 4

X.

The states share of cost for this project is a bargain in comparison to the money that would be spent should we have another storm such as that of 1978. We respectfully request that the state supply to the Corps a letter of intent, as far as funding for the project.

Thank you,

Elaine Hurley

Elaine Hurley, President
Pines Riverside Association

CC:
EOEA/MEPA Unit
Frank Stringi
Point of Pines Beach/Conservation Association
Representative Edward J. Markey
Senator Francis D. Doris
Senator Walter J. Boverini
Representative Vincent Lozzi
Representative William Reinstein
Representative Michael J. McGlynn
Representative Nicholas Mavroules
Senator John A. Brennan, Jr.
Representative Steven V. Angelo
Representative Thomas W. McGee
Representative John C. McNeil
Representative Alfred E. Saggese, Jr.
Commissioner Ilyas Bhatti

X2

.HE REGIONAL FLOODGATE PLAN AND FEEL IT PROVIDES THE HIGHEST LEVEL OF FLOOD PROTECTION WITH THE LEAST ENVIRONMENTAL IMPACTS. WE FEEL IT IS A PROJECT OF NECESSITY DUE TO THE EVER INCREASING HIGH TIDES.

NAME	ADDRESS
Elaine Hursley	21 Revere Ave
Robert C Lopez Jr	143 Mills Ave
Frank MacDonald	143 Mills Ave Rev
Louie C Miraglia	143 Mills Ave, Rev.
Rita C. Tramonte	22 Beckett Av.
Shiela L Tarantino	22 Beach Ave
Joseph Tarantino	" "
Chas Bellanni	123 Mills Ave Revere
Kim Guerians	123 Mills Av Revere
Frances R. McDonough	23 Gilbert Ave Revere
Robert S Savage	107 Mills Ave
Lorenzo Martucci	295 North Shore Rd.
[illegible]	16 WADLEIGH AVE.
Bridget McKeon	16 Wadleigh Ave Revere
[illegible]	71 Mills Ave Revere
[illegible]	71 Mills Ave Revere
Patricia M. Mahoney	29 Wadleigh Ave Revere
Henry L Jouve	63 MILLS AVE REVERE
Virginia C Jouve	63 Mills Ave Revere
Mary E D'Ambro	10 Archer Ave Revere

X

THE UNDERSIGNED MEMBERS OF THE PINES RIVERSIDE ASSOCIATION SUPPORT THE REGIONAL FLOODGATE PLAN AND FEEL IT PROVIDES THE HIGHEST LEVEL OF FLOOD PROTECTION WITH THE LEAST ENVIRONMENTAL IMPACTS. WE FEEL IT IS A PROJECT OF NECESSITY DUE TO THE EVER INCREASING HIGH TIDES.

NAME	ADDRESS
Barbara Wafer	219 North Shore Rd Riverside
Harold M Wafer	219 No Shore Rd Riverside
Ben Di Domenico	15 Becker Ave
Karen Di Domenico	15 Becker Ave
Lillian Hoffman	27 Frank Ave
Irene Elikk	11 Frank Ave
Sal Carcinello	11 Gilbert
Brenda Tarantino	16 Gilbert Ave
Russ + Pat Brundage	273 No Shore Rd
Mrs Josephine Rubino	279 No Shore Rd
Marlene Morrissey	29 Blanchard Ave
James Morrissey	29 Blanchard Ave
Marie Miner	33 Mills Ave
Arthur F Lennon	11 Wadleigh Ave
Ca Wah Chan	321 North Shore Rd
Mui Ping Chan	321 North Shore Rd
Edmund W. Bell	17 Arcadia Ave
Georgia Bell	17 Arcadia Ave
Maria Micinelli	11 Arcadia Ave
Maria Delcristofaro	31 Mills Ave
Richard Delcristofaro	31 Mills Ave
Edward F Keller	10 Arcadia Ave

X

Point of Pines Yacht Club, Inc.

28 RICE AVENUE, REVERE, MASS. 02151

Telephone 284-9717

COLONEL DANIEL M. WILSON
DIVISION ENGINEER
U.S. ARMY ENGINEER DIVISION,
NEW ENGLAND
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS, 02254-9149

MEPA Rec'd 7-28-84

DEAR M.WILSON:

I AS THE COMMODORE OF THE POINT OF PINES YACHT CLUB WOULD LIKE TO LET YOU KNOW THAT WE STRONGLY SUPPORT THE PLANS THAT ARE BEING PRESENTED TO BUILD THE SEA WALL AND GATE AT THE ENTRY TO THE PINES RIVER.WE THINK THAT THIS WALL IS A MUST FOR THE PROTECTION OF OUR YACHT CLUB, OUR BOATS.

THE SEA WALL IS IN A GREAT LOCATION BECAUSE WE ARE ALSO THE LOWEST POINT OF ENTRY TO THE PINE LAND AND FOR THAT REASON THE WALL WILL ALSO PROTECT THIS AREA.

WE ARE IN STRONG SUPPORT OF THE WALL AND THE GATE AND WE ARE WILLING TO HELP IF POSSIBLE TO MAKE IT HAPPEN.I HOPE THAT THE PROPER PEOPLE WILL MAKE THE PROPER DECISSION TO SUPPORT THIS SEA WALL.

THANK

Emery Richard

COMMODORE

CC:DAVID SHEPARDSON
EDWARD J.MARKEY
WALTER BOVERINI
FRANCIS D. DORIS
VINCENT LOZZI
MICHAEL J.MCGLYNN
WILLIAM REINSTEIN
ILYAS BHATTI
NICOLAS MAVROULES
JOHN A. BRENNAN JR.
STEVEN V. ANGELO
THOMAS W. MCGEE
JOHN C.MCNEIL
ALFRED E.SAGGESE,JR.

Y

Town of Saugus

TOWN HALL
298 CENTRAL STREET
SAUGUS, MASSACHUSETTS 01906
(617) 233-7573

Norman B. Hansen
TOWN MANAGER

July 25, 1989

Colonel Thomas A. Rhen
Division Engineer
N.E. Division, Corps of Engineers
424 Trapello Road
Waltham, MA 02254-9149

SUBJECT: FLOOD CONTROL

Dear Colonel Rhen:

This note is to reaffirm the Town of Saugus' interest in controlling flood damage in the Saugus River area.

The Town plans to continue its flood insurance program and also is pledged to enforcing all wetland laws to protect the estuary stage areas along the marshes and the Saugus River.

Although the Town is committed to this effort, there is limited or no funds available to maintain and operate any flood control gates or devices in the Saugus River at this time.

Sincerely,

Norman B. Hansen

Norman B. Hansen
Town Manager

dmp
cc: Joseph Orphant, MDC
Rep. Steve Angelo
Robert Hunt

Z

Town of Saugus

CONSERVATION COMMISSION

SAUGUS, MASS. 01906

July 25, 1989

Mr. David Shepardson
EOEA/MEPA Unit
100 Cambridge Street, 20th Floor
Boston, MA 02202

Dear Mr. Shepardson;

The following are my comments after review of the Flood Damage Reduction Feasibility Report and Draft Environmental Impact Statement/Report. The project has great merit in the amount of protection afforded to the greatest number of homes and businesses in the study area. However, funding at the city/town level appears very remote at this period in time.

My major concern was and continues to be the delicate balance in the ecosystems of the salt marsh in the Saugus and Pines River estuary in the rare event that the gates close longer than anticipated coincidentally with an increase of fresh water run-off from heavy rains. 1

My second concern, that of creative developable land by lowering the flood plain elevation seems to be addressed by the fact that the Army Corps of Engineers will be zealously guarding the existing estuary/flood storage area. 2

It is the intent of the Saugus Conservation Commission to do the same. One area of continuing concern is the finding some time ago by the then DEQE that the Atlantic Ocean was considered compensatory storage, thus allowing superseding orders to be written by the Department. I feel this is an area that needs clarification, and I hope that has changed. 3

Because of the financial plight of cities and towns, I join other town boards in urging the state to fund the non-federal portion of the costs of this project. If all of the environmental impacts of the flood damage reduction project can be mitigated, I urge the elected officials from our district at the state level to support the funding.

Very truly yours,

Anne M. Cyros
Chairman

AMC/mw
cc: Colonel Daniel M. Wilson
Commissioner Ilyas Bhatti
Honorable Nicholas Mavroules
Honorable Francis D. Doris
Honorable Steven V. Angelo
Town Manager, Norman B. Hansen

AA.

CORPS RESPONSE

AA. 1. - 3. Assuming an essentially worse case condition with (1) an SPN ocean tide coincident with the 100 year interior runoff (Appendix B, table 36), (2) floodgate closure at +2 feet NGVD on an incoming tide, (3) gate closure for a period of about 6 hours, (4) the first flush of storm runoff is retained behind the floodgate, (5) no significant improvement in present storm runoff quality and (6) greater quantity of storm runoff due to more urbanization and better drainage; the following qualitative water quality conditions would be expected. About 4250 acre feet of storm runoff would be temporarily retained in the estuary along with 1560 acre feet of wave overtopping water from Broad Sound. A mixture of storm runoff and salt water would gradually build up over the six hour period with the storm water comprising about 45% of all estuary waters just before the gate opening. Salinity would temporarily be severely depressed from ambient natural sea water conditions. Coliform bacteria readings would temporarily be quite high with the relatively short detention period not being long enough for significant DO depletion. Nutrients, suspended solids, turbidity, color, oil and grease, metals and other contaminants would all temporarily significantly exceed the natural condition. After gate opening natural tidal flushing would quickly disperse the storm runoff water to Broad Sound, as would naturally occur, rapidly returning estuarine water quality to normal levels within a few tide cycles. However, some build-up of contaminated sediments in the estuary is bound to happen but it should not be much different than naturally occurs with the present low velocities. (Generally less than about 1 fps throughout most of the estuary.)

Similarly, for the 100 year design tide coincident with the 10 year runoff and the 500 year design tide with 50 year runoff, maximum retained storm water could reach about 20 and 40 percent of all estuarine waters, respectively. Water quality changes from natural conditions would be comparable to that for the SPN discussed above although reduced in magnitude based on the relative percentage of storm water runoff retained.

The frequency of these extremely rare events must be emphasized. The SPN design tide coincident with 100 year runoff is probably in the order of once in a several thousand year condition. The 500 year design tide coincident with 50 year runoff is probably between a 500 year and 1000 year event. A 100 year design tide concurrent with a 10 year runoff is likely between a 100 year and 500 year condition. Exact frequencies of these coincident conditions are impossible to quantify!

During a repeat of the Blizzard of 1978 (Page B-12), an approximate 100 year tidal event in which runoff was low due to precipitation mainly as snow, there would be no significant storage of storm runoff and no measurable water quality changes. In fact, introduction of contaminants from tidal flooding of urban lands would be minimized. In a repeated January 2, 1987 tidal flood (15 - 20 year event) as shown on page B-110, there would be little storage of storm runoff and negligible water quality changes since rainfall runoff was again low. As shown in table 3 (page B-5,) all recent tidal floods above 9 feet, NGVD have not had extreme storm water runoff. The average yearly conditions of 2 to 3 gate closures for durations of 1 to 2 hours with negligible storm runoff is the typical mode of operation for the project. As such, typical average water quality changes with the floodgate will be negligible with the exception of potential accelerated sea level rise as discussed in the response to comment J. 8.

S. RUSSELL SYLVA
Commissioner

The Commonwealth of Massachusetts
Department of Environmental Quality Engineering
Metropolitan Boston - Northeast Region
5 Commonwealth Avenue
Woburn, Massachusetts 01801

935-2160

January 9, 1986

Daniel Colanton
23 Seagirt Avenue
Saugus, MA 01906

RE: WETLANDS/SAUGUS
File #67-218 Genoa Avenue

Gentlemen:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Quality Engineering has completed it's review of the above-referenced project file in preparation to issuing a Superseding Order of Conditions. Pursuant to the Massachusetts General Laws, Chapter 131, Section 40, the Department is issuing the enclosed Order permitting the proposed project based upon the Notice of Intent and plan(s) submitted, an on-site evaluation and discussion with the project applicant and his representatives, the FEMA Flood Insurance Studies, and conditions the Department has deemed necessary to protect the environmental and public interests involved.

The proposed project, located off Seagirt Avenue in Saugus, consists of the construction of a portion of Genoa Avenue which will service the proposed single-family dwelling, an associated driveway and the necessary utilities. Construction will involve the excavation, filling and grading of the site necessary to support the forementioned structures.

The Department's review of the file has determined that the main concern(s) for the proposed project is its possible impact(s) upon the statutorily significant interests of flood control and storm damage prevention. Specifically, due to the fact that the entire site is below the 100 year flood elevation (elevation 10.0) it was presumed that the filling (approximately 4,000 cubic yards) necessary for said project would cause an increase in flooding to the area and possible damage to adjacent properties. It is the Department's understanding that the inability to provide compensatory storage on site was also a concern and therefore a reason for the denial by the Conservation Commission.

An evaluation of the July 19, 1982, Federal Emergency Management Agency's Flood Insurance Study for the Town of Saugus, indicates there is a distinction between the flood prone areas of Saugus. Dependent upon the location(s), said areas are influenced by either inland (riverine) flooding, with the source being the Saugus River and its tributaries, or are influenced by coastal flooding, the source being the Atlantic Ocean. Detailed studies (flood profiles) have resulted in specific cross-sections along portions of the Saugus River north of this project site, and farther away from the Ocean (Lynn Harbor). The areas south of those

AA2
ATTACH.

cross-sections, however, have been determined to be those influenced primarily by coastal flooding due to their proximity to the Ocean. As a result, under the Regulations, this particular site more characteristically meets the definition of "land subject to coastal storm flowage". Although the performance standards for those lands subject to inland flooding do require the creation of compensatory storage for filling in those areas within the floodplain (310 CMR 10.57), there is no provision in the Coastal Regulations for such storage within land subject to coastal flooding. The reasoning behind this being, that the ocean which is virtually an open system, actually functions as the compensatory storage. In this case, due to the proximity of the site itself and that reach of the Saugus River north of it, to the Atlantic Ocean, in addition to those studies conducted by FEMA, it is the Department's opinion that compensatory storage not be required for the project. Protective measures throughout construction, measures to prevent erosion and siltation to the adjacent marsh will be required, as will the maintainence of the drainage ditch in a free flowing condition. Further, final grading is to be such that the foundation will be above elevation 10.0 and the land level with that of adjacent property(s).

Please be advised that it has been the Department's responsibility to address those concerns of the Wetlands Protection Act as they pertain to this project, and determine from the review, the conditions necessary to protect the interests of the Act. In this case, it is the Department's opinion that the project as proposed under file #67-218 may proceed accordingly, with no adverse impact to the environment.

Should any party dispute these findings, your attention is directed to the language in the Order (signature page) which specifies your right to, and procedures for, appeal.

If you have any questions, please call Miss Brooke Monroe at 935-2160, extension 136.

Very truly yours,

William A. Krol

William A. Krol, P.E.,
Deputy Regional Environmental Engineer

WAK/ba/cd

cc: Saugus Conservation Commission, Town Hall, Saugus, MA 01906
David M. Weiner, Atty., 2 Mount Vernon St., Saugus, MA 01906
Parsons & Faia, Inc., 480 Lincoln Ave., Saugus, MA 01906

AA 3

August 5, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, MA 02254-9149

SUBJECT: Saugus River Floodgate Plan

Dear Sir,

After attending the meetings and reading the main report and the Appendixes, the Saugus Action Volunteers for the Environment (S.A.V.E.) would like to endorse the floodgate proposal plan as detailed by the Corps.

If built, the project should actually protect the river estuary by mandating no loss of retention areas (i.e. below + 7.0 feet NGVD as recommended); in addition to protecting the properties of many Saugus residents. It would be incumbent upon the state and town to vigorously enforce this protection, something that has been lacking until recently. No longer would the ocean be allowed as the compensatory storage area for any wetland filling.

As for funding, the state should consider this project as a economic gainer because the cost to the state in disaster relief, damage to state roads and loss of taxable business income in the event of major storms (e.g. hurricanes) would exceed the state cost of this project over its life expectancy.

Sincerely,

Richard Mytkowicz

Richard Mytkowicz, President of S.A.V.E.
24 Emory Street
Saugus, MA 01906

cc: D. Shepardson
E. Markey
W. Boverini
F. Doris
I. Bhatti
N. Mavroules
S. Angelo

AB

Bay Marine, Inc.
P.O. Box 37, Nahant, Mass. 01908
(617) 581-1200

July 26, 1989

Colonel Daniel M. Wilson
Division Engineer
U.S. Army Engineer Division
New England
424 Trapelo Road
Waltham, MA 02254-9149

RE: Saugus River and Tributaries
Flood Damage Reduction Study

Dear Sir:

Bay Marine, Inc., a waterfront marine business endorses the plan to construct coastal flood protection in Lynn, Saugus and Revere, Massachusetts.

Several thousand pages of detailed reports on the feasibility of this project have been written. This letter cannot hope to add to the contents of those reports. We do, however, wish you to know that the difficulties faced by those shoreline owners and users are of minor consequence when compared to the massive social disruption and property damage caused by coastal flooding.

We not only endorse this project, but ask that it be expedited.

Very truly yours,

John E. Ryder, P.E.
President

JER:tb

cc: Lynn Chamber of Commerce
Honorable Edward J. Markey
Honorable Walter J. Boverini
Honorable Francis D. Doris
Honorable Vincent Lozzi
Honorable Michael J. McGlynn
Honorable William Reinstein
Honorable Nicholas Mavroules
Honorable John A. Brennan, Jr.
Honorable Steven V. Angelo
Honorable Thomas W. McGee
Honorable John C. McNeil
Honorable Alfred E. Saggese, Jr

AC

FOR THE PROTECTION OF THE ENVIRONMENT, FOWLING, FISHING, AND THE MARITIME TRADITIONS

Concerned Coastal Sportsmen's Association, Inc.

Chairman
Conservation Committee
Ronald Terenzi
28 Randall Road
Revere, Massachusetts 02151

August 4, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Colonel Wilson:

The Concerned Coastal Sportsmen's Association, Inc., after studying all information provided by the Army Corps of Engineers, of the Saugus Flood Damage Reduction Study, agree to the Regional Saugus Floodgate Plan as most effective.

Our only major concerns are to ensure the traditional activities of the area are not impinged upon by any construction impacts i.e., pollution, extreme sedimentation, insufficient tidal flow, disturbance of wildlife habitat. (Etc)

We hope to continue our studies as the project progresses, and offer any insights our group may possess.

Respectfully,

Ronald Terenzi

Ronald Terenzi
Chairman
Conservation Committee
CCSA, Inc.

C/C. Mr David Shepardson
Board of Directors
Membership
File

AUG 0 8 1989

AD

Nahant SWIM, Inc.
Safer Waters in Massachusetts

August 4, 1989

Colonel Daniel M. Wilson, Division Engineer
U. S. Army Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Re: MEPA FILE # 6497
Saugus River and Tributaries
Flood Damage Reduction Study

Dear Colonel Wilson:

The Saugus Floodgate Project is one of the worst proposals I have ever seen. It simply should not be built. It would set a dangerous precedent for damming up salt marshes coast to coast...and in the long run man's hubris would only lead to greater disaster when, eventually, nature wins the battle.

Enclosed for your contemplation is an interesting item from the April, 1988, Scientific American. This is a suggestion for what the Corps of Engineers might wish to do to rescue the five condominiums at Revere Beach when the inevitable occurs.

Attached is further comment.

With best wishes,

Polly Bradley

Polly Bradley, President
Nahant SWIM, Inc.

AE,

SWIM, c/o Northeastern University Marine Science Center, East Point, Nahant, MA 01908
Phone: (617) 581-0075 or (617) 581-1424

Nahant SWIM, Inc.

Safer Waters in Massachusetts

Re: EOEA File Number 6497

Building a floodgate across the Saugus River is like taking a tiger and caging it in the circus. It will be tamed, partly tamed, but it will sicken and die.

The Saugus Marshes-Revere Beach area is a classic salt marsh-barrier beach ecosystem. It is a wild, living, evolving biological and geological system. The natural processes will be destroyed as the whole ecosystem is dammed off, not only by the floodgate but also by the seawalls and dikes that will go from Winthrop to the Nahant causeway. 2

And the project will be a national prototype: the Corps of Engineers will systematically dam up every unprotected salt marsh it can get its hands on, coast to coast and around the Gulf of Mexico. For virtually every salt marsh has people around its fringes who have built in flood-prone areas and would like to be protected from their unwisdom by the federal government. 3

Salt marshes and barrier beaches are, indeed, endangered species.

Mother Nature has been a great enforcer of her laws: although there may be human laws against filling, they can be changed by politicians and ignored by the wealthy and influential. Although there may be a manual on how to operate floodgates, its rules also can be changed and ignored. 4

Nature is strong, but fragile. "Replicating" wetlands? A wetland will not survive unless it is where nature intended it to be. "Mitigating" effects? The fisheries nursery, already stressed by decades of dumping, will take one more step towards being stressed out of existence. 5

The ironic thing is that although the salt marsh may be destroyed, it is doubtful whether in the long run even the Corps of Engineers can permanently stop the slow shoreward march of the Revere Barrier Beach. The condos on the beach are still houses built on the sand, and a there is a two-thousand-year old warning about such construction. Seawalls are small compared to the great mass of sand which composes the beach, and the changes of currents caused by the floodgate may very well erode away Point of Pines sooner rather than later. 6

The Saugus Floodgate Project may yet be known as the Great Corps of Engineers Sand Castle Contest.

Polly Bradley, President
Nahant SWIM, Inc.

July 20, 1989

AE 2

SWIM, c/o Northeastern University Marine Science Center, East Point, Nahant, MA 01908
Phone: (617) 581-0075 or (617) 581-1424

50 AND 100 YEARS AGO

SCIENTIFIC AMERICAN

APRIL, 1938: "Two research chemists of the pulpwood industry have put ordinary bacteria to work producing power from the sulfite waste liquors of pulp mills. Many years ago it was definitely proved that the formation of marsh gas (methane) was caused by the action of tiny anaerobic bacteria that fermented the cellulose contained in decaying swamp vegetation. If this was so, reasoned the research men, could not the same bacteria be used to generate methane from the organic material in waste sulfite liquors? The methane produced could then be burned to generate electric power."

"The altitudes of the northern lights have been skillfully measured in Norway by a number of observers connected by telephone, who took photographs at the same instant from different places a measured number of miles apart. A simple calculation determines the altitude of the aurora. About 60 miles is the most common result. Sometimes the tops of the streamers may be 250 miles above the earth."

"In the light of its astounding capacities, in the light of its protein nature, and viewed against the background of all distinctly non-living arrangements of atoms and all living organisms, the virus molecule must for all time appear to be a transition form between non-life and full-flowering life—but a form vividly more alive than not."

"By a new process of electroplating, developed in England, metals may be deposited on molded plastic articles to produce decorative or protective effects. Copper, brass, nickel, chromium, silver and rhodium have been successfully applied. This new finish permits many articles to be made of plastics of light weight that hitherto have been die cast."

"If you look in any chemistry text book that is not just fresh off the presses, you will find a table of the chemical elements that ends at uranium, number 92. That is the way the chemical elements, building stones of everything around us, were first arranged back in 1871 by Mendeleeff, the Russian, and Meyer, the German, to form the periodic table. Yet science has now discovered not one but at least four 'transuranic' elements. Little wonder they were not discovered earlier, for the discovery was dependent upon creating them first, and this was done only through the use of neutrons, discovered in 1932."

APRIL, 1888: "The number of women of our country who have undertaken and are carrying on business enterprises successfully are not a few, and they increase every year."

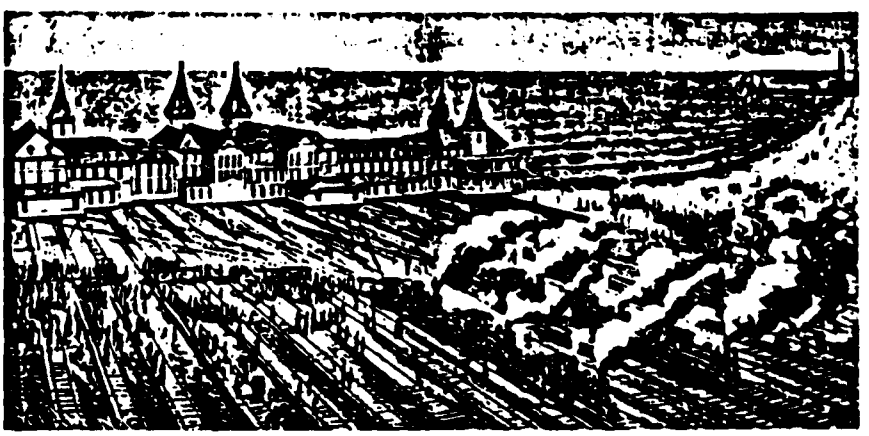
"Almost every newspaper from Australia has something to say about the rabbit plague in that colony. And now comes a similar wail from China, stating a danger threatening that empire. A recent number of the Peking *Gazette* contains a memorial to the Emperor from the Governor of Uliassutai stating that, owing to the appearance of swarms of rats, it has been found necessary to alter the routes of the government courier in three of the postal stations in the Khalkha region of Outer Mongolia."

"The fury of the chemical world is the element fluorine. It exists peacefully in company with calcium in fluorspar, and also in a few other compounds; but when isolated, as it recently has been, it is a rabid gas that nothing can resist. In uniting with sodium, potassium, calcium, magnesium and aluminum the metals become heated even to redness by the fervor of its embrace. Even the noble metals, which at melting heat proudly resist the fascinations of oxygen, succumb to this chemical siren."

"The government administration of the new metropolitan railroad in Berlin has devoted considerable attention to the subject of diminishing the noise of trains passing over the viaducts and bridges, which, of course, form the principal portion of the road. Where the rails on a metal bridge rest on wooden cross ties, or on timbers running longitudinally, the sound is less than where they are secured directly to the metal, and it may be still further diminished by placing cushions of felt or rubber under the timbers before bolting them to the bridge construction."

"The conservator of the museum at Bergen, Norway, Mr. Frithjof Nansen, intends very soon to investigate the interior of Greenland. For making the journey over the ice or snow he means wholly to rely on the use of the Norwegian snow shoes, long narrow strips of wood (ash as a rule) on which great distances can be traversed in an incredibly short time."

"We illustrate in our present issue the moving of the Brighton Beach Hotel, one of the great buildings of Coney Island. For many months there has been a marked tendency on the part of the water to wear away the sandy beach upon which the building was erected. It was evident that unless some preventive measures were taken, the house would be undermined and carried away. The plan was to place the hotel upon a number of freight cars, resting on parallel tracks, and to draw it where wanted by locomotives."



The Brighton Beach Hotel is moved away from the sea

AE 3

SWIM

SWIM - Nahant Citizens Committee for Safer Water in Massachusetts

Re. MEPA #6497

8/4/87

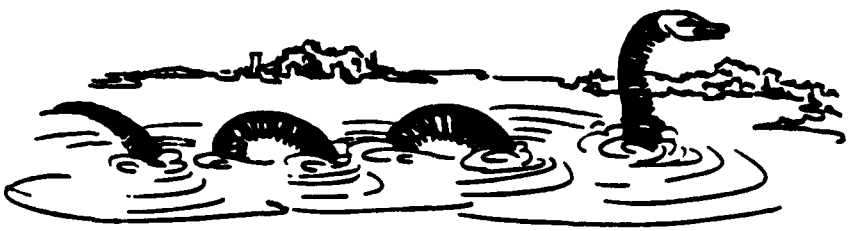
Dear Dave,

Enclosed for your amusement is further comment on the Langer Headgate project.

The decision to turn down the sixth condo complex at Revere Beach was outstanding.

Sincerely,

Polly Bradley



SWIM, c/o Northeastern University Marine Science Center, Eliot Pond, Nahant, MA 01908
Phone: (617) 581-0075 or (617) 581-1434

AF

CORPS RESPONSE

AB. No Response Required

AC. No Response Required

AD. 1. See General Response 1. and Responses J.7, J.8.

AE. 1. The project is strongly supported over any other option by the four communities and the MDC to protect their communities against coastal flooding. The project was formulated for minimal impacts on the environment and acquisition of the estuary provides greater protection than without it.

AE. 2. The floodgate would continue to allow the natural flushing of the estuary nearly 99 percent of the time and when closed no significant impact would occur to the estuary. See Responses AE.1, J.7 and J.8.

AE. 3. Protection of any area is requested by a non-Federal sponsor and measures are required to minimize environmental impacts. It is unlikely this or any project would result in significant damage to a salt marsh with existing environmental controls.

AE. 4. With authorization of the project by the U.S. Congress including acquisition of the estuary, the estuary would have greater protection than without the project.

AE. 5. See Response AE.4.

AE. 6. The effect of the floodgate structure on currents which is believed small would be further evaluated in design to assure no significant impact on Point of Pines.

AF. No Response required.

AG. 1. Every effort has been made to accurately estimate the levels of historical and future flooding and damages and to assure the benefits are reasonably stated for the project.

AG. 2. See General Response 4. on Sea Level Rise.

AG. 3. See Response AG. 1.

AG. 4. Those investigations essential to determine the feasibility of the project have been accomplished in the planning stage. Other investigations essential for final design would be accomplished at that time.

AG. 5. See General Response 1.

AG. 6. The project has been formulated in compliance with Federal and State policies to protect the environment as well as the residents.

AG. 7. The project beneficiaries includes Federal, State, regional and community as well as private interests.

Nahant SWIM, Inc.
Safer Waters in Massachusetts

August 4, 1989

Secretary John DeVillars
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Floor
Boston, Massachusetts 02202

Dear Secretary DeVillars:

Congratulations on your excellent decision to turn down the sixth condominium complex at Revere Beach!

The enclosed item from the April, 1988, Scientific American is a suggestion for rescuing the five condominiums already built when the inevitable occurs. Of course air pollution regulations may have to be temporarily waived...and even so, to my knowledge, the Brighton Beach Hotel no longer exists.

I have enjoyed the new covers for the Environmental Monitor. Maybe you can get permission to use this illustration for an upcoming issue.

Please also enter this letter and the SciAm page as comment on the Saugus River Floodgate Project, which competes in sheer hubris with the Brighton Beach Hotel Project.

Sincerely,

Polly Bradley

Polly Bradley, President
Nahant SWIM, Inc.

cc: David Shepardson

Attached: See "50 AND 100 YEARS AGO" Article, pg. AE

AF

*MEPA #6497

SWIM, c/o Northeastern University Marine Science Center, East Point, Nahant, MA 01908
Phone: (617) 581-0075 or (617) 581-1424

CORPS RESPONSE

AG. 8. Option 2 was not supported by the communities due to the limited protection provided. See Responses J.5 and General Response 2.

AG. 9. Residents and businesses alike reported yearly flooding, and tide levels verified by gaging stations and surveys of properties verified the results of these interviews. The repeated warnings for coastal flooding are directed to low coastal areas which includes the study area.

AG. 10. West Lynn Creamery was interviewed by the Corps' project manager. The first floors and most of the grounds were above the 1978 floodplain and no significant damages occurred.

AG. 11. The damages are based on surveyed water levels and flood damages due to flooding.

AG. 12. The Corps and consultants interviewed nearly a hundred people in Lynn and over half along Lynn Harbor to determine the historical flood levels in Lynn. All buildings in the floodplains were surveyed for ground and first floor elevations and damages per foot of flooding to estimate the extent of future flood damages.

AG. 13. Protection along Lynn Harbor prevents coastal flooding throughout the Lynn floodplain as well as extensive volumes of overland flood waters from entering the estuary contributing to flooding in Revere, Saugus and Malden.

AG. 14. Project navigation-type benefits are based only on those vessels stored in the protected area. No benefits have been taken for the commercial fleet normally moored in the rivers. Above the Route 107 bridge, many if not, all of the commercial vessels were pulled from their moorings in 1978 and ended up on land or pounding against the Route 107 bridge and shore, as reported during interviews. Similar damages occur during other storms.

AG. 15. The SPN is the Corps goal for level of protection. With the 100-year Plan 91% of the benefits to the SPN Plan are realized, and 97% with the 500 year Plan. Only 3% of the benefits accrue between the 500 year and SPN plans.

AG. 16. There is no economic discrepancy in computing benefits for areas with SPN protection. For example, yearly damages are accounted for at 100% probability; while 100 year damages are 1%; 500 year at 0.2%, and SPN damages at 0.05%. The small amount of additional benefits accruing to the SPN Plan exceeds the increment of cost to provide this level of protection.

AG. 17. Because there are no streamflow gaging stations within the Saugus River watershed there is a lack of exact data on freshwater inflow. The statement that "runoff from the upper estuary is equated with the Parker River" is only partially correct. When determining the estimated freshwater inflow, records from several USGS gaging stations were analyzed along with computed discharges from the urbanized area.

MASSACHUSETTS ASSOCIATION of CONSERVATION COMMISSIONS, Inc.

10 Juniper Road Belmont, Massachusetts 02178

[redacted] (617) [redacted]

Col. Daniel M. Wilson, Division Engineer
Corps of Engineers New England Division
Trapelo Rd.
Waltham, MA 02254

August 7, 1989

Mr. Steve Davis, Director MEPA Unit
Executive Office of Environmental Affairs
20th Fl., 100 Cambridge St.
Boston, MA 02202

Re: EOEA #6497
Saugus River Flood Damage
Reduction Study

Gentlemen:

The Board of Directors of the Massachusetts Association of Conservation Commissions has authorized me to comment on the EIS/EIR prepared by the Corps of Engineers for the Saugus River Flood Reduction Plan. I would like to thank the Corps and Mr. Steve Davis of the MEPA Unit for extending the comment period a few days. Forty-five or fifty days of review for such a complicated project which has been undergoing development for a decade and which presents such masses of material in so many volumes is a tough assignment for anyone.

MACC is not in favor of this flood-gate project and could only support option 2, the non-structural option, as it eliminates the environmental impacts.

We believe the threat of flooding has been exaggerated and the benefits of the project inflated. 1

We are concerned that over the long run there will be detrimental effects on the estuary and salt-marsh, especially with more than the minimal number of gate closings. 2

We do not feel that the Corps has adaquately addressed the potential environmental losses nor has it attempted to quantify those losses in terms of economic costs, while at the same time many devices have been used to inflate the potential economic losses from flooding. 3

We also feel that certain essential investigations have been neglected while no money has been spared on the economics of the project and on design features, some of which could have been delayed until after this EIS/EIR. 4

We are certain that the reduction in flood hazard will increase pressures to fill the marsh and to build in the adjacent floodplain in contradiction of Federal Policies to discourage building in these sensitive areas (EOs11988 and 11990). Such development, especially in the upper estuary, could eliminate forever the possibility for marsh expansion in response to potential increase in water levels. 5

And we are strongly opposed to the use of what will be more than $100,000,000 of tax-payers' money to mitigate decades of wrong-headed land-use decisions by the municipalities of Lynn, Revere, Saugus and Malden, in defiance of State and Federal policy. 6

We would like to point outthat public funds have already been used twice to support growth in these flood-prone areas; once for the infrastructures;

AG,

Again to fund the NFIP; and now this project proposes a third level of public funding in order to reduce the flood risk to zero, mostly for the benefit of private interests. 7

We strongly recommend that the Corps implement the less costly Option 2 and use some of the left-over funds to acquire wetlands in the estuary and to acquire easements in the floodplain so that a buffer zone can be created around the marsh, wherever possible. The state portion of the funding for this project could well and better be used to enhance wetlands enforcement capabilities or for the purchase of wetlands and open space. 8

I would like to address some of these issues in more detail:

As a resident of an easterly facing property on the shoreline not far from the study area I and my husband have paid close attention to coastal storms which have occured in the last decade. Storms from the SE have been frequent, those from the NE few in number. I find the assertion of yearly flood damages (MR 17 and elsewhere) highly dubious nor do I believe the statement (EIS 4.11) that there are repeated warnings about coastal flooding in the study area (emphasis added) several times a year. 9

I have talked with Mr. Chris Scangus, Vice-President of West Lynn Creamery who has been with the company for 27 years. He says there has never been flooding around the creamery and that in 1978 the nearest flooding was at Nahant Circle, He said the problems were from deep snow. 10

Mr. Massaro, owner of Home Expressions tile company, east of the creamery, also said that there has never been flooding around his store.

Has the Corps similarly exaggerated the threat in other areas or has it simply failed to distinguish the inconveniences and costs in "78 caused by snow fall rather than flooding? 11

In any case, these observations confirm my conclusion that there is much less threat of flooding in Lynn Harbor than the Corps says because the northern portion of Lynn Harbor is protected by the Nahant causeway and the inner Harbor is protected by upland to the NE. 12

Because sea-walls in Lynn will almost exclusively benefit the private developments of Lynn South Harbor and Harborside Landing the MACC opposes their construction with public funds. We are doubly opposed since thus far the Corps has been unwilling to mitigate the loss of Black Duck habitat by using vertical walls (recommended by USF&W) instead of sloped revetments. Sea-walls in Lynn should be constructed by those interests which would benefit from them. 13

While the Corps exaggerates the threat of flooding it also exaggerates the benefits of the project in many ways, for example, it is stated that the Saugus River will be enhanced as a harbor of refuge for the 280 recreational and 70 fishing vessels which use the river. Overlooked is the fact that almost all the recreational boats and many fishing boats will be hauled out during the season of maximum risk. Knowlegeable people already consider the Saugus River an excellent port in an easterly gale and the photograph (MR 65) confirms that the river is protected above the Rt. 107 bridge. 14

The most problematical strategy to justify this project is the choice of the Standard Project Northeaster for the design criteria. The "Standard Project" is SOP in Corps projects. The SPN in this case has a 1 in 2000 probability of occuring in any one year, which would surely make it "rare and unusual", ruling it out, by Corps guidelines. 15

of consideration AG 2

By choosing the SPN the Corps extends the floodplain to include at least 2000 additional buildings, assigning them and their contents (including cutlery!!) the accounting benefits of total flood protection. I would like to point out that there is a basic accounting discrepency in using the costs of a project with a 100 year life in equality with benefits which might occur once in 2000 years or perhaps even in 500. Due to the inconsistencies in the presentation of cost/benefit data and the scattering of information through many volumes of supporting documents it is extremely difficult and time consuming to follow the economics of this project. We would hope that the next draft of the EIS/EIR will present all facts and methods in a single volume in a manner understandable to readers who do not have degrees in accounting. 16

The Corps has certainly not skimped on developing hydrological data or on design details or cost/benefit data, however it appears that there are some areas of investigation which might be more complete or exact.

There appears to be a lack of exact data on fresh-water input to the estuary. Run-off from the upper estuary is equated with the Parker River, an almost entirely rural watershed. Since there are no maps presented of either watershed one must have faith that they are comparable. Inflow for the urbanized watershed is even more incomplete and the calculations are "quite subjective" (Aps B-8). An applicant before a conservation commission could never get away with subjective calculations and we hope they will be required for the next EIR. If gate closings were to increase, the fresh-water inflow from storms could have significant impacts. In pursuing this matter we think the Corps should identify the location of <u>all</u> storm water discharges. 17

It appears that the floodgates have been designed to accommodate most of the concerns of fisheries experts but we are concerned that at future stages of the project the drive to reduce costs will lead the Corps to reduce the number of gates or modify the design (Vol 6 Cost-3) without concern for the environmental effects on the fish or the estuary's water quality. 18

As is usual in EIRs the project proponent fails (never attempts) to identify the potential environmental costs of the project. This floodgate proposal would cause the loss of Black Duck habitat for which no value is given. The EIR says nothing of the value of the marsh (there are calculations for marsh value by Odum and others) nor does it say anything about the value of the fisheries <u>and</u> the related or dependent businesses such as boatyards, tackle-shops, restaurants and so forth. Wetlands are the base of the pyramid for this important portion of the regions economic life and for a great deal of its pleasures yet the potential losses due to this project in the long run are totally ignored in this report. 19

The only attention really paid to marsh loss is the Corps contention that the marsh is protected from filling by the Massachusetts Wetlands Protection Act and Federal statutes for the protection of wetlands.(EIS 6.1 However the IEP study discusses this issue in detail in terms of historical filling and future outlook (Vol 4 pp 28-31,38,39). MACC experience leads us to concur with IEP's conclusion that the outlook for wetlands law enforcement looks bleak, especially in view of state and federal budget cuts. MACC views the once a year educational program proposed by the Corps and local "assurances" to protect wetlands as a feeble gesture, especially as certain of the municipalities in this study area are well-known for turning their eyes when illegal filling takes place. Strong development pressures will increase as flood control reduces construction costs and land values rise. The Corps expects the .5 acres of illegal fill 20

AG 3

CORPS RESPONSE

Peak discharge frequencies from the upper Saugus River watershed were based on analysis of gaged records from the neighboring Aberjona River at Winchester. The Aberjona River is a developed watershed with the majority of it's area in the towns of Winchester, Reading and Woburn. Peak flows from urbanized watersheds are often a function of limited channel conveyance and obstructions to flow. Therefore it is considered that analysis of the Aberjona River gaged records gives a reasonable indicatio. of future upper Saugus River discharge frequencies.

Peak discharge frequencies for the urbanized lower Saugus River watershed were computed using rainfall excess which was then compared with recorded peak flows from small gaged watersheds and computed flows using flood flow formulas for urbanized areas.

Because average flow conditions on the Aberjona River are effected by diversions for water supply and other uses, estimated average Saugus River flows were based on the unaffected Parker River gaged records.

As part of design studies it is currently planned that a rainfall runoff model of the entire Saugus River watershed will be developed. This model will be required to better define the freshwater components of the tidal system and will identify the major freshwater inflow points to the estuary. Listing of pertinent hydrologic work items during design is in Vol 3, Appendix D, page E&D 6

AG. 18. The design criteria for the floodgate openings is to provide sufficient flow so there is no significant change to the estuary tide levels, flushing or river currents.

AG. 19. See Response G.2 and E.5.

AG. 20. See Response E. 3.

AG. 21. See Response E.4.

AG. 22. See General Response #1 - regarding estuary protection and development.

AG. 23. Blue mussel forage areas for black duck will not be significantly impacted. The toe of the new structures will have a cobble type apron anticipated to provide adherence substrate for mussels and algal beds available for waterfowl foraging. See General Response #3. Additionally the proposed mitigation will be constructed from disturbed upland fill (I 95 embankment), not wetlands.

AG. 24. See Response J.1.

AG. 25. See Responses: General #1 and #3, and J.1.

AG. 26. The major storm drain outfalls have been identified on project plates in Appendix D.

to remain the same but we predict it will increase. In anycase, .5 acres of fill a year adds up to an unacceptable 50 acre loss over the life of the project.

Added to the prospect of more illegal filling is the even worse prospect that flood-control will give added emphasis to the two "sleeping" state projects which if implemented would wreck havoc in the wetlands. These are the Rt 1-1A connector road and the commutor station and parking lot planned for the RESCO landfill when it closes. The prospect of increased safety from floods will do nothing to keep these projects under wraps.(EIS 6.189) 21

The Corps contends that the floodgate project will not induce development in the floodplains but there is more than enough evidence in the IEP study and quoted in the U.S. Fish and Wildlife letter of Oct 18, 1988 to conclude otherwise. The EIR and IEP study both state that much of the existing building in the floodplain is sub-standard and deteriorated. We suggest that as part of the Implementation of Option 2 the Corps could acquire these properties or buy the development rights so that lots adjacent to the saltmarsh could be kept as a buffer for future expandsion and the prevention of pollution. 22

MACC cannot support the Corps proposal to build a clam flat as there are alternatives to the destruction of intertidal areas, the clam flat would not mitigate for the loss of Black Duck habitat and we hardly view the digging up of marsh vegetation from a nearby area as mitigation. In any case the strategy of mitigation is problematical. 23

And finally we are alarmed at the proposal to turn over the operation of the floodgates - hopefully never to be built - to other than Corps personnel. The fate of a very sensitve estuary would hang on the proper and restrained operation of these flood-gates and the Corps should not be allowed to duck the responsibility for this project if it is ever built. 24

* In the unfortunate event that this project should go forward we urge that it be allowed <u>only</u> with the following conditions:

1. That no sea-walls be built in Lynn Harbor at public expense and that only vertical walls be permitted.
2. That the Corps acquire or make funds available for the acquisition of the marsh and development rights to land adjacent to the marsh in order to create a buffer zone.
3. To make the above acquisition feasible down-zoning of property in the marsh might have to be required as a local "assurance." 25
4. That all or a major portion of I-95 embankment be removed <u>to the level</u> of the marsh to improve flushing of the high marsh and prevent transition to Phragmites sp. which is less protected under the MWPA.
5. The Corps be required to retain the responsibility for operating the floodgates.

***6. That the Corps be required to design and implement a monitoring program for the marsh and estuary which will continue for the life of the project.

If implemented this project is likely to become a prototype for other areas and it is essential to know what the impacts will be.

Sincerely yours,

Judith C. Skinner

Judith C. Skinner, MACC Board of Directors

AG 4

CORPS RESPONSE

AG. 27. See General Response #1. regarding estuary protection and development.

AG. 28. See General Response #1. regarding estuary protection and development. There are no known buildings which have not met building requirements for FEMA. An investigation to determine any violations would be time consuming and not likely yield information pertinent to this study, since the communities enforce flood plain zoning.

AG. 29. Benefit data is contained in Appendix G. Cost data is contained in Appendix D. The relationships of costs and benefits are shown in Appendix G and summarized and highlighted in the Main Report. The explanation on p. G-27 of Appendix G explains the methodology by which expected annual losses are calculated. A rough calculation made using the data provided in Table 50 will not yield the exact annual benefits shown later in the appendix. The data in Table 50 shows the recurring losses for certain selected points on the damage - frequency curve. The actual computations of the expected annual damages were made using many more points than shown in Table 50, thus yielding more accurate annual damage figures.

AG. 30. Expected annual damages equal the monetary value of physical and non-physical flood losses that can by expected in any one given year, based on the magnitude and probability of all possible flood events, including the SPN event. Project benefits equal the difference in expected annual damages without and with the project. Floods of all probabilities are included in the expected annual damage calculation, from the 5 year flood, which has a 20% chance of occurrence, to the 10,000 year flood, which has a .01% chance of occurrence. The SPN flood, which is the Standard Project Northeaster representing the worst reasonably likely possible combination of flooding conditions (excluding extremely rare combinations of meteorological conditions), is considered to have a frequency less than the 1000 year event, or less than a .1% chance of occurrence. The costs of the project were calculated for various levels of protection, as detailed in Appendix D. The project costs were calculated independently of the project benefits.

AG. 31. This effort would be outside the scope of the study since no significant adverse impacts occurr to these resources.

AG. 32. Detailed sedimentation investigations are beyond the scope of present studies. This can only be accomplished in design when 2 dimensional model results are available.

AG. 33. Run-off data presented in the report is believed adequate for defining project feasibility and effects.

AG. 34. All Corps EM's which exceed 100 in number, stacked end to end would be many times thicker than the study report with all Appendices. A list of EM's is available upon written request. The Corps will try to accommodate all reasonable written requests for copies of specific EM's. However, these design manuals are written for engineers and may not be entirely meaningful to the general public.

Questions or Issues which need to be addressed

1. Locate all storm drain outlets in estuary on a map. |26
2. Locate all developable lots adjacent to marsh on a map. |27
3. Indicate how many buildings in 100 year floodplain have been built in violation of State Building Code and PEMA requirments since 1973. |28
4. Get all cost/benefit data together in one volume and clearly explain methodology(s). For instance explanation on Page G-27 of App. G does not work out by my calculations. |29

   Explain how SPN is used in calculating costs and benefits or damages and benefits. |30
5. Assign some values to marsh, fisheries and allied commerce |31
6. Investigate sediment patterns and potential changes which will be produced by floodgate structure before next phase of project. Will there be effects on Pt O Pines, Revere Beach, Lynn Harbor, west of the bulkhead where the yacht club is. |32
7. Get better real data on run-off from urban watershed. |33
8. Include all EMs which Corps operates under in an Appendix.(full text). |34

AG-

CORPS RESPONSE

AH. 1. See General Response #1. - regarding estuary protection and development.

AH. 2. See General Responses #1 and #2.

AH. 3. See Response E.3.

AH. 4. See Response E. 5. and E. 6. and General Response #3.

AH. 5. The proposed mitigation adequately compensates impacts based on the project implementation.

AH. 6. See Response J.1.

AH. 7. US Army Corps of Engineers guidelines require that the flood prevention plan with the largest net benefits be identified in the report. This plan would provide protection against the SPN event. Corps guidelines also allow the historical rate of sea level rise to be used in calculating flooding damages and plan benefits.

AH. 8. Dunes and beach nourishment are not being used as mitigation measures.

AH. 9. In general, computer modelling is as close as one can reasonably simulate actual tidal conditions. Calibration of the model to existing data for actual tidal cycles as was done for this study and the use of sound engineering judgement can produce a very good representation of the estuary. We feel comfortable with the accuracy of the model at this phase of the planning process. During further design studies the Corps plans to conduct additional field data collection, and 2 dimensional mathematical tide and current modelling of the study area as well as a physical hydrodynamic model of the floodgate structure. This effort will optimize the design of the floodgates and assure negligible flushing impacts. (See Appendix B, Addendum II)

AH. 10. The Corps of Engineers working with the non-Federal sponsors have selected the Regional Plan and it meets Federal criteria for implementation.

AI. 1. See General Response #4.

Alexandra D. Dawson, J.D.
2 West Street, Hadley, MA 01035

July 21, 1989

LTC Stanley J. Murphy
Dpty Div. Engineer, NE Div.
US COE
Trapelo Rd.
Waltham MA. 02254

Re: Saugus River Flood Reduction Plan

I am writing on behalf of the Mass. Assoc. of Conservation Commissions and the Pioneer Valley Group of the Sierra Club.

We regard Option 3, the floodgate plan, as a bad option environmentally. The major push behind this option is to encourage development of the floodplain and wetlands area behind the floodgates. This is putting public money behind private development. This kind of thinking used to inform the Corps a generation ago; but since the EOs to protect wetlands and floodplains, the Corps has recognized that non-structural alternatives for flood control are to be preferred. 1

For this reason, more attention should have been given to Option 2, the nonstructural option. This was dismissed as impractical, but it is in fact not a bit more impractical than the proposal under Option 3 that the communities prevent further development behind the floodgates by enforcing regulations that protect wetlands and floodplains. If this idea is practical under Option 3, why is it not practical under Option 2? As for existing uses, the NFIP is, at this time, in force in all four communities. That program has the express purpose of insuring existing structures in floodprone areas. 2

In truth, therefore, if the floodgate option is exercised, then the COE, by way of mitigation, must be prepared to acquire some or all of the marsh. This is the only way to protect it, since, by the Corps' own regulations adopted under s. 404 of the Clean Water Act, prevention of filling in wetlands is not the Corps' goal except in very limited circumstances. Environmental groups have long complained about the weakness of the Corps' regulations in this respect. It is now necessary to reflect this weakness by an acquisition program. 3

Further, should the floodgate option be chosen, we support heartily the demand of the US F&WS that Lynn Harbor walls be substituted for revetments so as to provide continued protection and feeding areas for black ducks. We find it difficult to believe that these are more expensive than the massive revetments. We understand the reasoning is, they would require the acquisition of easements for tie-rods. It is equally difficult to believe that the landowners being benefited by this immense project 4

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would not donate such easements. Or, conversely, if walls and revetments are such an intrusion, why would not the landowners require easements for the loss of access to their property occasioned by the dikes? 4

If the floodgate project goes forward, the COE must remove the stub of I-95 left behind by the state, by way of mitigation. This is not only a large nuisance where it is; arguably, it has value as fill if removed. 5

Finally, the maintenance and operation of this floodgate system could not be left to local or state operation. Local bodies are not sophisticated enough to do it, and the state lacks funds. In Wellfleet, on Cape Cod, operation of a tide gate was left to the local people, and they closed the gate altogether to prevent any saltwater intrusion, thus turning a salt marsh into a fresh one and freeing up land for development. Even the direct intervention of the state proved insufficient to change this regime, and ultimately a compromise was reached which seriously damaged the marsh. 6

Unfortunately, we are not in a position to do a complete analysis of your cost benefit figures. However, it does not seem reasonable to us to include protection of areas affected only by the SPN, a flood with a practically unmeasurably low chance of happening in any year. It may sometimes be correct to build for such floods, because of future flood rises, but the Corps regs would not allow such a conjectural benefit to be figured in at this time for the purpose of C/B analysis under an EIS. 7

Please do not try to persuade us that artificial dunes and beach nourishment are effective mitigation. I know I have seen Corps material pointing out the futility of trying to prop up one single portion of a hydrological system when the rest of it is not there. 8

We are hoping that the hydrological information will be further reviewed, because we understand the flushing characteristics of your proposed floodgate system is based only upon a model, not upon an existing system. 9

In all, we are disappointed that the NE Corps, one of the best regions and the region which pioneered natural valley storage for flood control, should be favoring such an old-fashioned, wasteful, expensive and environmentally difficult system in these more enlightened times. 10

Sincerely,

Alexandra Dawson

AH2

MASSACHUSETTS ASSOCIATION of CONSERVATION COMMISSIONS, Inc.

LINCOLN FILENE CENTER **TUFTS UNIVERSITY** **MEDFORD, MASSACHUSETTS 02155**
(617) 381-3457

August 7, 1989

Re: EOEA #6497

Mr. Steve Davis, Director MEPA UNIT
EOEA
20th floor, 100 Cambridge St.
Boston, MA 02202

Dear Mr. Davis:

MACC is much concerned that this project will go forward partly in response to as yet problematical predictions of increases in the rate of sea-level rise.

MACC strongly urges that no project be implemented on this basis until there is judicious and objective evaluation of the threat and the development of well-thought-out policy of response. This obviously cannot happen when the proponent of such a large project, with a large vested interest in its implementation is also the evaluator.

Sincerely yours,

Judith C. Skinner

AI

Massachusetts Audubon: North Shore
159 Main Street
Gloucester, Massachusetts 01930
(508) 283-0598 / 744-2967

11 August 1989

Colonel Daniel M. Wilson
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, MA 02254-9149

RE: Saugus River and Tributaries: Feasibility Report - Draft Environmental Impact Statement/Report. EOEA # 6497

Dear Colonel Wilson,

Massachusetts Audubon Society is strongly opposed to the proposed regional Saugus River Floodgate Plan (Option 3) outlined in the Draft Environmental Impact Statement/Report (EIS/R). The proposed plan, if constructed, will:

* promote the use of public funds for a large prodigious project at a time when communities and state coffers are depleted; 1

* counter well-established federal and state environmental policies (the 1968 Estuary Protection Act, the 1972 Coastal Zone Management Act, the 1982 Coastal Barriers Resource Act (study area not included in current CBRA list), and Massachusetts Executive Order # 181) on wetland, barrier beach and dune habitats; 2

* irrecoverably destroy 11 acres of valuable intertidal and 3.8 acres of subtidal habitats, and temporarily impact 10 additional acres of marine habitat; 3

* foster development in flood-prone and high hazard lands; and, 4

* encourage the development of salt marsh borders. 5

Therefore, Massachusetts Audubon Society recommends that the following steps be taken.

1. The Army Corps of Engineers (ACOE) ought to fully develop a non-structural shore protection plan that minimizes environmental impacts in shoreline and marsh habitats throughout the study area, yet affords the necessary protection for facilities and houses currently within the study area. 6

2. Practical and effective coordination is needed between local, state and federal agencies in evaluating and developing a non-structural flood protection plan. Mr. Gordon of the U.S. AJ.

Fish & Wildlife states in his letter to the ACOE that "despite extensive coordination with the Corps, we continue to have significant concerns regarding the proposed project." The proposed plan must address all issues and not oppose any current state or federal environmental policy, regulation or law.

3. All agencies must examine and develop an acquistion program to purchase wetland, marsh, barrier beach and peripheral lands to provide for additional flood protection and the maintenance of the ecological integrity of the study area. The ACOE argues that this is not cost effective, since the marsh is already protected by strict regulations (Wetlands Protection Act, etc.). This area has had a history of illegal filling and unless continous enforcement is carried out effectively, such activity is likely to continue if the marsh remains in private hands. The marsh is presently zoned for industrial use, even though it is unbuildable, hence one option of reducing the land costs would be by rezoning at the local level. 7

4. If environmental mitigation of wetland habitats is necessary with the flood protection plan, then develop the plan with goals greater than 1:1 exchange, since there is little known about the complete replacement of all chemical and physical marine processes, particularly intertidal habitats. 8

5. There must be a limit to all future development within the study area, particularly large public or private utility projects, that may be damaged or endanger the public in the event of large storm events. Developers ought to be discouraged from building within this vulnerable area, rather than spending federal and state funds to subsidize the protection of their projects. Large development projects, i.e. the proposed General Electric cogeneration plant, MBTA Blue Line extension and the South Harbor area of Lynn, are high risk enterprises to be considered in flood prone areas. The combined impacts of these projects may result in hundreds of marshland acres being filled or permanently altered. 9

SPECIFIC COMMENTS ON DEIS/DEIR:

<u>Sea Level Rise</u>:

In order to be able to accurately evaluate the long term ecological consequences of any flood protection plan, more information is needed on the effects of sea level rise on the projected number of gate closings and the likely ecological and hydrological consequences at these levels. 10

The proposed plans are likely to set a precedent for flooding caused by the projected sea level rise. We therefore think it wise for to study the effect on coastal processes before and after any plan is implemented. 11

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CORPS RESPONSE

AJ. 1. See Responses 0.9. and K.5.

AJ. 2. The project will be implemented with full compliance to these acts.

AJ. 3. Those are the significant impacts proposed to be mitigated (minimized) and ultimately these impacts must be weighed against the flood damage reduction benefits to the human environment.

AJ. 4. See General Response #1. - regarding estuary protection and development.

AJ. 5. See General Response #1. - regarding estuary protection and development.

AJ. 6. See General Response #2.

AJ. 7. See Response E.3.

AJ. 8. See Response J.11.

AJ. 9. See General Response #1. - regarding estuary protection and development. State agencies and the communities are fully aware of the threat of coastal flooding. Development plans are usually reviewed with this threat in mind.

AJ. 10. See Response E. 10. and General Response # 4.

AJ. 11. See Response E. 11.

AJ. 12. See General Response #4.

AJ. 13. See General Response #3 and E 8.

AJ. 14. We are aware of recent information regarding introduction of non-permitted contaminants from RESCO and General Electric. The General Electric permitted discharge and RESCO were discussed on pages C-26 through C-36, C-69 through C-71 and C-84 through C-88 of Appendix C. In short, with negligible change in flushing for the open gated condition no measurable change in water quality is expected. During the typical 2-3 gate closures or 1-2 hours each, no significant water quality changes are expected due to the relatively short and infrequent closures. During extremely rare closures of around 6 hours some small localized increase in temperature could temporarily occur near thermal discharges, however this is not expected to be significant. Leachate from the RESCO landfill could actually be reduced because the effect of high storm tides with associated wind waves will be minimized. Further detailed study would be needed if future accelerated sea level rise required much more frequent and longer periods of gate closure. (Also, see responses to comments J.8. and AA.1. and General Response #4.)

The DEIR claims that the tidal floodgates will cause no significant negative environmental impacts. We agree that the effect of 2-3 closings of several hours per year are likely to be minimal. Massachusetts Audubon's concern is with the greater number of closures likely to occur with the projected sea level rise. Depending on the extent of sea level rise, this is likely to have a negative impact on water quality (from reduced tidal flushing) and salt marsh vegetation (enhanced brackish and freshwater species, such as Phragmites). 12

Black duck and diving duck habitat in Lynn Harbor:

Lynn Harbor is an important area for wintering waterfowl. Massachusetts Audubon is particularly concerned that black ducks and other waterfowl species that feed along the shoreline of Lynn Harbor will be displaced by any permanent structures or shoreline alterations from flood protection projects. Black ducks have been declining in population since the 1950's and are currently protected as an international priority in the North American Waterfowl Management Plan. If shoreline structures are constructed, they ought to be placed closer to shore or on formerly filled tidelands (e.g. South Lynn Harbor Project) rather than intertidal or subtidal locations. 13

Coastal Water and Sediment Quality:

The largest industrial plant within the area, General Electric in Lynn, presently has 21 NPDES permits to discharge wastewater into the Saugus River. The discharges are located up river of the proposed shoreline protection structures. The permitted flows range from 0.01 MGD to an unlimited flow rate at one drain which drains a fuel storage area. General Electric was recently fined for polluting the Saugus River. In addition to inputs from General Electric there is the adjacent landfill of the RESCO plant which contains hazardous wastes (e.g. dioxins) that may be threatening water quality of the area. Any proposed flood protection project must consider the ramifications of restricting flow or altering sediments that may be contaminated by prior activities. 14

State Designated Barrier Beach:

Portions of the shoreline within the project area are within the State Designated Barrier Beach area. The designation prohibits the use of state and federal funds for construction projects that encourage growth and development according to the Executive Order # 181. 15

Coastal geological processes:

The protection of our coastline behind walls and revetments interrupts the natural movement of sediments (in this case, from the mid section of Revere Beach both north toward Point of Pines and south to Roughan's Point). Coastal barriers generally protect one area of coastline at the expense of another. Revere Beach is already slated to be renourished with sand (from the 16

AJ3

CORPS RESPONSE

AJ. 15. See Response E. 1.

AJ. 16. Beach nourishment and dune stabilization have been the preferred method of shoreline stabilization throughout the project area. All practical use of this method, versus walls and dikes, have been engineered. No further studies will be conducted for finalization of the EIS/EIR.

AJ. 17. The selection of the optimal project plan was made based on current Corps regulations. "The decision rule for the selection of the components and scale of Federal water resource development is to maximize net benefits -- the difference between gross annual economic benefits and gross annual economic costs. In determining the project scale, additional increments will be added to the project as long as the value of each new increment exceeds the marginal costs." (National Economic Development Manual - Urban Flood Damage, March 1988, P. III-5) Using this methodology, the Regional Plan, Option 3, was optimized at the SPN level of protection (see p. 57, Main Report). The economic optimization of the plan is calculated assuming the project will provide benefits for 100 years. Total expected annual benefits are calculated taking into account the frequencies of all flood events, including the very rare frequencies of the 500 year and SPN events which may occur over the project life.

AJ. 18. See Response J.11. Also, natural populations of the full range of growth (cohorts) categories will be transplanted to assure a continuous spawning stock. The monitoring effort will produce a report on the entire ecological health of the mitigation area (including associated flora and fauna). This report will be used to conduct management decisions on the use (harvest, closure, replanting, wetlands enhancement, etc.) of the area. Native species will be the preferred cover for flora transplants. The ecological monitoring report will make recommendations for replanting or transplanting. We appreciate your correction regarding Rosa rugosa

AJ. 19. See Response E 4.

Interstate 95 embankment) to counteract erosion. Most of the coastline in the study area is already behind revetments or walls, however more study is needed regarding any impact flood protection structures may have on coastal geological processes. 16

Scale and economics of project

The ACOE proposed project (Option 3) was developed using a 500 year storm model yet the project life span is 100 years. Given the current financial status of the commonwealth and the local communities, the structural shoreline protection plan does not appear to be a prudent use of public funds. 17

Additional Concerns:

Shellfish mitigation (p26): More detail of the shellfish mitigation plan (20.2 acres) is needed. We urge a greater than 1:1 replacement of shellfish beds, since it is not clear how successful it will be. What size soft-shelled clams will be transplanted? How will success or failure of softshell clam transplantation and mussel recruitment be monitored?

Salt marsh mitigation (p.26-27): We urge a greater than 1:1 replication of salt marsh, since salt marsh mitigation is a very inexact science. Also, mitigation studies indicate the importance of substrate replacement, as well as the flora and fauna.

Monitoring of salt marsh and shellfish replication (p29). Why was four years chosen as the time period for monitoring. Particularly with the salt marsh, we urge an assessment after four years of the newly created marsh community and an evaluation to determine if more monitoring is warranted. It is important to determine if all aspects of the salt marsh (plants, associated fauna, in addition to the physical and chemical processes) have been replicated, and not just that the plants are surviving. 18

Mitigation of construction impacts (p33): We urge that construction impacts be mitigated at greater than 1:1 rather than spreading out the impacts on 5.9 acres by mitigating 0.4 acres.

Mitigation with native species (p35): We urge that only native species of plants be used in any mitigation efforts. Rosa rugosa is not a native species.

Mitigation of upland and border areas (p35): Who will determine if these areas need to be replanted? This is left vague in the DEIS/DEIR.

Dune grass restoration (p38): More detail of dune grass restoration and monitoring is needed.

New impacts: Why is the assumption in the DEIS/DEIR that new impacts on the marsh (e.g. MBTA station, illegal filling, Revere 19

AJ4

Connector) will be more severe without the tidal floodgate project? ↑19

In summary, Massachusetts Audubon strongly supports a non-structural approach to flood protection initiatives within the Lynn, Malden, Revere and Saugus communities. We deeply appreciate the opportunity to comment on this project and encourage the reviewers to carefully consider our comments.

Sincerely,

Peg Brady

Peg Brady
Director

cc: David Shepardson
Joseph Horowitz
Robert Hunt ✓
Steve Bliven

AJ

CLF Conservation Law Foundation of New England, Inc.

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August 14, 1989

Colonel Daniel M. Wilson
Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, MA 02254-9149

David Shepardson
EOEA/MEPA Unit
100 Cambridge Street, 20th Floor
Boston, MA 02202
Reference: EOEA File Number 6497

RE: EIS/EIR Saugus River and Tributaries, Flood Damage Reduction

Dear Colonel Wilson and Mr. Shepardson:

Thank you for this opportunity to provide comments on the above-referenced Study.

Conservation Law Foundation ("CLF") finds that this draft EIS/EIR is seriously flawed and inadequate. Notwithstanding the extensive effort and research that has gone into this multi-year study and for the reasons set forth below, the Corps has failed to analyze the proposed federal action properly under the National Environmental Policy Act and other federal statutes, regulations and Executive Orders. Moreover, the state proponent has not met its burden under the Massachusetts Environmental Policy Act. It is our view that the deficiencies are so central to the analysis that a supplemental draft EIS/EIR should be conducted responding to the criticisms of commenters, including CLF, rather than attempting to patch up the existing draft.

First, we would like to state that CLF fully endorses the views expressed by the U.S. Fish and Wildlife Service (FWS) in its May 4, 1989 review letter. Many of our principal objections

CORPS RESPONSE

AK. 1. The DEIS/DEIR has been found acceptable. We anticipate the MEPA and EPA ratings on the FEIS/FEIR will substantiate this assertion.

AK. 2. See General Response 2. The initial nonstructural plan was presented factually to the public.

AK. 3. The Regional Plan provides the highest level of protection, significantly exceeding protection afforded by the nonstructural plan.

AK. 4. Initially the nonstructural plan was developed for Revere which was used as an indication of its feasibility. At the request of the State, similar plans were completed for Lynn and Saugus.

AK. 5. See General Response 4.

AK. 6. It was unfortunate that CLF was unable to accept participation on the Technical Group. Early stages of project planning, revealed the early selection of the Regional Plan was not made by the MDC or Corps. The four community sponsors and many of the Federal, State and local agencies initially preferred and endorsed the Regional Plan, subject to no significant adverse impacts on the estuary. Also see General Response #1.

AK. 7. As part of local assurances compensatory storage will be required when fill is placed below elevation 7 feet NGVD if allowed in the acquired estuary for public projects, approved by Federal, State and local agencies. Reference Appendix B, Section 12 "Design Floods" pages B-107.

AK. 8. See Responses E.1, E.2, E.3, E.4 and General Response #1.

AK. 9. See Response E.3.

AK. 10. See Response E. 3.

AK. 11. Peak discharge frequencies for the upper Saugus River for projected future conditions were based on analysis of gaged records of the Aberjona River at Winchester. The Aberjona River, located adjacent to the Saugus River watershed, is a highly developed watershed with the majority of its area in the towns of Winchester, Reading and Woburn. Projected future condition peak discharge frequencies for the upper Saugus River are listed in Table 5 Appendix B page B-7. Peak flows from an urbanized watershed are often a function of limited conveyance of the river channel and obstructions to flow such as bridges and culverts. For theses reasons it is felt that analysis of Aberjona River gaged records gives a reasonable indication of future upper Saugus River discharge frequencies. The peak runoff rates from the lower urbanized Saugus River watershed were increased considerably to estimated future, with project, improved drainage conditions. The estimated present, projected future and estimated maximum potential discharge frequencies for the lower Saugus River are listed in Table 6, Appendix B, page B-8.

cannot be put more succinctly or cogently than FWS the Service has already done: "inadequate consideration of alternatives, particularly non-structural ones; the [adverse] effect of the project on floodplain development and wetland protection; intertidal habitat losses from levee construction within Lynn Harbor; fish passage impacts from flow constriction at the mouth of the Saugus River; and the potential for wide-scale ecological impacts within the estuary from increased floodgate operation in the future." (FWS Comments at p.2). To that list, we would add concerns about the mitigation proposals and the cost/benefit analysis.

o Inadequate consideration of non-structural alternatives--

It is clear from the limited discussion of Option 2, and the limited nature of the non-structural elements studies under Option 2, that this alternative was not seriously considered, notwithstanding the level of "formulation" and "reformulation" mentioned at A-47. It seems to have been abandoned early in the review process (See Appendix A) and presented inadequately and negatively to concerned citizens (For example, see incomplete Table 12 in Appendix A). Most of the discussion, e.g. A-55, seems to have centered around Option 1 as compared to Option 3. 2

The lack of citizen interest in Option 2 seems to have been improperly used to determine the level of investigation of this alternative. It is not surprising that floodproofing is a less attractive option to individual landowners than an option under which their property values will increase, at the expense of other taxpayers. Indeed, homeowners and condominium developers who have not felt it worth insuring their properties against the 500 year event would get that protection under Option 3 and could certainly be expected to be enthusiastic about such a free bonus. The Point of Pines residents chose to risk another flood rather than open their beach to the public in exchange for protection (A-21). 3

Moreover, the claim that flood-proofing measures would only apply to 7% of the housing stock needs further investigation. Much of the housing at Point of Pines and other areas is already floodproofed to one degree or another. Although requested by State agencies to complete the nonstructural analysis, the Corps declined to do so. 4

It is clear also that the option of acquiring deteriorated property and relocating residents now in flood areas was inadequately evaluated, even though such an approach may well be the most cost-effective over a long period of time, given sea 5

AK.2

level rise. The report recognizes that the effectiveness of the floodgate scheme, together with the other structural measures relied on in Option 3, will probably change as a result of sea level rise, but no predictions are made as to what measures will then need to be taken, or their costs. Acquisition and relocation, responding to need as it arises, may allow for real costs to be balanced more equitably throughout the project period against private benefits. 5

Rather than analyze thoroughly the alternative of a planned, gradual retreat from flooding of urbanized areas, the Corps and MDC appear to have concluded early that the regional floodgate plan, which will likely induce development in the present floodplain, was the plan of choice. 6

o Adverse effects of the project on floodplain development and wetlands protection

The likely effects of the project on floodplain development and wetlands protection are seriously understated, although the Planning Correspondence documents make very clear that this issue was at least as important to the citizens as flood protection.

While it is clear that there will be significant additional losses of wetlands associated with major public works projects already planned (EIS 60 - 61), the cumulative impact of these changes do not appear to have been considered, even though the storage capacity of the marsh will apparently be reduced. The storage capacity, in turn, is critical to the ability of Option 3 to avoid flood losses or, alternatively, high pumping costs, and thus to the benefits to be derived from Option 3. 7

A related omission is the lack of any realistic discussion of other incremental, future, authorized wetland losses to development. As FWS points out, fill and alteration has been and will continue to be permitted by the Corps as well as by the municipalities and State agencies. Public projects are most likely to obtain variances for salt marsh filling from the state DEP. Local agency denials of private development requests for so-called "limited projects" (310 CMR 10) or for roads/highways in wetland resource areas, are rarely upheld by the state DEP on appeal. The public can have no real security in respect to realizing the benefits of this costly project until, at a minimum, the requisite marsh storage area is acquired in fee, or the equivalent. The IEP report (e.g. A-80) reinforces this conclusion. Official promises in respect to zoning education or maintenance are meaningless and unenforceable. 8

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Wetlands protection regulations are weak or inapplicable (see e.g. A-12: "Because of the restriction to the movement of water caused by the I-95 fill, the area does not meet the definition of wetlands described in the corps Wetland delineation Manual."). Also, regulatory agencies usually condition projects, rather than deny them, and enforcement of conditions is erratic and ineffective, particularly for "small" infractions. As an example: a variance was granted to the town of Marshfield for alteration of a saltmarsh and receipt of public money on condition that an acre of new marsh would be created using removed vegetation. Three years later, the DEP has had to issue an enforcement order against the town, and to use the threat of administrative penalties (an expensive and time-consuming process for the state agency). The "mitigation" saltmarsh is still non-existent. 9

Although it is heartening to know that enforcement is being pursued, such "voluntary" restoration of areas with unauthorized fill, described at A-12-14, presupposes a considerable investment of paid staff time, including attorneys, as the Marshfield example shows (not to mention the years of ineffective attempts to get the Resco dump removed from the marsh). Since maintenance of storage area is critical to realization of Option 3 benefits, according to Corps' engineers, CLF believes that a good part of the costs of continuing enforcement and the coordination of a "network of agencies and concerned groups" must be added to the costs of Option 3. Even if we could share the Corps' belief that "it is extremely unlikely that any future fills will go undetected," detection is useless if fill is not removed. And in the unusual case where that happens, the valuable salt marsh life that has been destroyed is not "restored," even though restored storage may prevent a flooded basement. 10

At and B-7, reference is made to peak river flows being modified by extensive wetlands in the headwaters of the Saugus in Wakefield, and by lakes and ponds. The EIS should have presented a much fuller discussion of the effects, over the project period, of urbanization and filling of freshwater wetlands and floodplains along the Saugus river segments lying outside the project area. Perhaps the effects of incremental filling will be negligible in respect to the downstream storage capacity but an estimate of upstream wetlands alterations and an assessment of changes to the rate of freshwater contribution to the estuaries should be provided. 11

We disagree with the conclusion of the EIS (EIS p. 6) that the preferred floodgate plan would not induce further development in the floodplain. And indeed the conclusion is not borne out by statements elsewhere in the EIS: "Areas which have lost their 12

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CORPS RESPONSE

AK. 12. See General Response #1. - regarding estuary protection and development.

AK. 13. See General Response #1. - regarding estuary protection and development.

AK. 14. See General Response #3.

AK. 15. See General Response #4.

AK. 16. The slight error in Table 3 of Appendix C is noted and it is recognized that the MDWPC samples exceeded the chronic criterium for cadmium. Paragraph 6.31 of the EIS will be revised accordingly.

AK. 17. The gate closure rates of 2-3 times per year for a few hours would occur initially. Additional discussion on sea level rise is included in General Response #4.

AK. 18. See General Response #4 and E.11.

AK. 19. The compensatory mitigation area adjacent to the Seaplane Basin was chosen because of the origin of the Basin was from man made excavation. The resultant high value shellfish basin is anticipated to be duplicated in the proposed mitigation area. See Response J. 11.

AK. 20. Residential damages were estimated for each residential structure in one foot increments from the ground upward. This stage damage functions were developed for 16 different types of residential structures. They were developed based on interviews with owners of each of the different types of structures. Thus they reflect the reality of flooding. The owners and management of each commercial, industrial and public structure in the flood plain were interviewed to obtain information on flooding damages. Again, estimates were developed in one foot increments beginning at ground level. The estimates of damages at GE were reviewed by GE management before acceptance by the Corps. There is no comparable data base to compare damages estimated by the Corps for a particular event with damages that have historically occurred with such events.

AK. 21. Apportionment of the Project Costs are explained in the Main Report. We agree, accepting the benefits and costs of the project will be important regional decisions, which is why news releases on the project have included all major news media.

character as wetlands but still lie below the elevation of the line of periodic tidal influence will be an inviting target for developers. Unless a clear and defended line of jurisdiction is established for those areas continued filling activities can be expected." "It is projected that with increased development and improved storm drainage systems in the future, peak discharges from the local area will increase significantly." (B-7). "It would need to be stipulated, as a part of local assurances, that all existing flap gate structures outletting to the Saugus-Pines River estuary would be maintained in good operating conditions, and any and all proposed new developments in these low areas would be thoroughly reviewed with regards to their potential impact on both drainage problems and/or needs." B-46, B-57 and elsewhere. 12

Under existing conditions, the threat of flooding or the cost of floodproofing is apparently holding development in check. Obviously, with that threat and that cost removed, development would increase. Huge condominium developments are already encouraged by the city of Revere along Revere Beach. As zoning changes may be made by the city council without benefit of a neighborhood vote, there is no assurance that this kind of development will not be encouraged elsewhere. Flood-proofing requirements for upgrading property would be removed and insurance premiums would be reduced when FEMA base flood elevations are lowered. (EIS-127). Much floodplain property now containing substandard and deteriorated housing (EIS-90-91) would become attractive for larger, new housing. The predictable cycle of building and flooding will recommence when gravity storm drains for new development, discharging into wetlands or their "buffer zones" (as permitted under existing regulatory law), once again back up in storm conditions. And development pressures will further increase when the planned MBTA station in East Saugus is constructed. 13

In sum, the EIS Appendices corroborate the local view and the concerns expressed by state agencies, as well as citizens, that development in the floodplain (with corresponding encroachment, into wetlands) will be stimulated by the Option 3 project. The Corps' and MDC's summary rejection of this evidence is simply not tenable.

o <u>Intertidal habitat losses from levee construction within Lynn Harbor</u>

The selected option will result in significant losses of 9.4 acres of high value intertidal habitat (EIS - 110). Of these, 14

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5.6 acres will be in Lynn Harbor. (EIS - 111). These losses seem entirely avoidable. The principal justification for the selection of the preferred dike system is the difference in costs, a major portion of which are associated with real estate acquisition costs. It strikes us as indefensible that the proposed structures are being built with federal and state money to protect these private coastal properties without a quid pro quo from the benefitted properties. It is particularly disturbing to read that the city of Lynn cited a need for the project because of 1978 flooding of a commercial landfill along the Lynnway and then to find that "A large commercial development is presently planned and under design for the landfill area." (B-52).

14

o The potential for wide-scale ecological impacts within the estuary from increased floodgate operation in the future

The claims of no significant long term impact by the Saugus River floodgate on water quality (EIS - 105), wetlands (EIS - 108), and navigation (EIS - 131-132) are based upon the low predicted rate of floodgate closure at the current sea level. It is well established, however, that sea level is currently rising at a rate of approximately 1 foot per century, and an accelerated rate of up to 4 feet per century due to global warming is a recognized possibility (EIS - 141). More frequent closures of the floodgate will be necessary to maintain the designed level of flood protection at either the historical or an accelerated rate of sea level rise (EIS - 150), and will have the following impacts.

15

Water quality behind the floodgates will deteriorate because of decreased salinity and dissolved oxygen, increased temperature, and reduced mixing with consequent deposition of toxic pollutants (EIS - 152).[1] The area of saltmarsh wetlands

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[1] A slight error in Table 3 of Appendix C (Water Quality) causes an under-representation of existing problems with water quality. The EPA marine acute criterion for cadmium is listed as 0.093 mg/l, whereas it should be 0.0093 mg/l (EPA Quality Criteria for Water, 1986, also known as the "Gold Book"; and Table 12 of Appendix C). With this correction, it is apparent that all of the MDWPC samples exceeded the chronic criterion for cadmium, in addition to the correctly presented fact that half of the samples equalled the acute criterion for cadmium. This is of greater concern given the fact that the Gold Book states that (1) the acute criterion may not be sufficiently protective at low salinities and (2) both the acute and the

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will decrease for two reasons. First, sediment input to the marsh will be reduced, thus reducing the ability of the marsh level to rise to keep pace with the rising sea level (EIS - 150). Second, the high marsh will not be allowed to move inland because of imposed limits to high tide levels, while the low marsh will be inundated more frequently and will thus decrease in area (EIS - 151). 15

The EIS raises all of these points and concludes that the historical rate of sea level rise of about 1 foot per 100 years "would have limited impact on the Study Area both without and with the project options" (EIS p. 152). We believe, however, that the negative impacts of the historical rate of sea level rise were under-estimated, because the rate of gate closure used for most analyses was the rate that can be expected only for the early years of the project. EB 17

The EIS currently states that an accelerated rise in sea level would have profound impacts, and that "[w]ith accelerated sea level rise, a decision would have to made whether to continue with increasingly frequent floodgate closures or raise the start of damages...." (EIS p. 152). We argue that the time for such a decision about the appropriate level for flood protection is now, before the expense of construction of the floodgate and before the likely damages to extremely valuable wetlands. We feel that the EIS has not adequately presented the choice between major construction or non-structural alternatives including planned retreat in the face of inevitable increases in flooding. 18

o Habitat Mitigation --

We do not find acceptable the plan to construct 10 acres of clam flats in the Seaplane Base area as mitigation for the habitat losses. First and foremost, the Seaplane Base location cannot be considered to be a suitable site for the losses elsewhere because of pollution and noise impacts from adjacent development and highways. Second, we agree with FWS that a mitigation ratio of at least 2:1 should be required because of the uncertainties associated with such replication projects. These uncertainties should be discussed in the EIS. 19

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chronic criteria may not be sufficiently protective of lobsters. Although the water quality tests conducted by the Corps did not reveal any apparent problems with cadmium, the MDWPC results are strong enough that they should be mentioned in the summary of metal contaminants in paragraph 6.31 of the EIS. 16

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o Cost/benefit analysis --

We do not accept the high average losses used for the economic analysis of Option 3 in the face of the moderate to low historical losses in this area. The Corps response to the Fish and Wildlife Service on this issue is not persuasive. For example, significant avoided annual damages are attributed to protecting the Lynn coastal area and GE factory. EIS flood survey information, however, does not support this attribution, and informal queries to Lynn and GE officials have produced testimony that range from 'no flooding has ever occurred' to 'flooding has occurred but it hasn't interfered with the operation of business'. The bottom line is that the model does not appear to be calibrated to the reality of the flooding experience in this area, a fact which calls into serious question the validity of the slim net economic benefit allegedly provided by Option 3. 20

Apportionment of the non-Federal share of the costs should be thoroughly discussed. Massachusetts taxpayers outside of the benefitted municipalities need to be informed of the funding obligations to be assumed by the State. 21

CLF looks forward to seeing a full treatment of the above issues in the final EIS/EIR.

Sincerely,

Peter Shelley (by EW)
Peter Shelley
Senior Attorney

Eleanor M. Dorsey
Eleanor M. Dorsey
Staff Scientist

cc: Gordon Beckett, U.S. Fish and Wildlife Service

AK

SIERRA CLUB • New England Chapter

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August 8, 1989

The Sierra Club comments on U.S. Army Corps of Engineers Saugus River and Tributaries Flood Reduction Study.

The Army Corps of Engineers has presented three options for controlling flooding problems in the Saugus, Lynn, Revere, and Malden coastal/wetland areas. Options 1, 2 and 3 vary with respect to price, effectiveness and impact on the environment. The Army Corps of Engineers preferred alternative for reducing flood damage in the Saugus, Lynn, Rever, Malden area is Option 3. The Sierra Club cannot support this option due to the substantial impact is has on the surrounding tidal and wetland areas.

Option 3 involves the placement of floodgates across the Saugus River and the re-conditioning of waterfront barriers in the Revere, Point of Pines and Lynn harbor areas. Option 3 is financially the most expensive of the three plans, and also has high environmental costs. The net loss of wetland/intertidal habitat acreage for Option 3 is 11 acres intertidal, and 3.8 acres subtidal habitat. 5.9 acres of intertidal habitat will be impacted during construction, and 4.5 subtidal acres will be dredged.

Option 1, consisting of structural local protection plans via the repair and construction of 8 miles of dykes and concrete seawalls, is even more hazardous to the environment than Option 3. This plan requires the filling of 17.7 acres of wetlands and and 20.2 acres of intertidal flats. This does not include the additional 10 wetland and 2.9 intertidal flat acres that would be impacted during the construction period. The financial cost of Option 1 is also quite high.

The Sierra Club's preferred alternative to the project would be Option 2: the non-structural plan. The Sierra Club believes that this is the only acceptable solution as Option 2 has no adverse environmental impacts.

Option 2 involves the floodproofing of buildings, an improved flood warning system, and the implementation of better evacuation proceedures. Further solutions include greater access to flood insurance, flood plain regulations, public aquisition of floodplain land, and the relocation of buildings. This option involves no loss of wetland/intertidal acreage, and has no adverse impacts on water quality. Although Option 2 does not provide the same level of flood protection as Options 1 and 3, due to the fragile nature of the surrounding vegitative and wildlife habitats, it is the only possible solution at this time.

The Sierra Club recognizes the need and the desire to prevent future flooding of and the ensuing damage to the communities of Revere, Lynn, Saugus, and Malden by the implementation of a plan that is the most successful for that area. However, the Sierra Club finds further fault with the Corps preferred Option 3 in the following areas.

It is stated that the estuaries and surrounding marshlands in the project area are designated Massachusetts Areas of Critical Environmental Concern (ACEC). Yet the floodgate project

AL.

CORPS RESPONSE

AL. 1. Project design does provide the least practicable impact to this area that accomplishes the project purpose.

AL. 2. See General Response #4. and Responses E. 10 and E. 11.

AL. 3. Continued nourishment of existing beaches is required for the project. Walls and dikes at Point of Pines and Lynn Harbor are being replaced or raised to improve their purpose of reducing coastal flooding. At Point of Pines studies during design will evaluate a total dune beach system in lieu of all or part of the revetments.

AL. 4. See General Response #1. regarding estuary protection and development.

AL. 5. See General Response #3. and Response A.K. 19. Specifically the reference was to 9.4 acres of intertidal habitat and 0.6 acres of subtidal habitat.

AL. 6. Investigations from 1990 to 1994 are for the modelling and final design of the project and preparation of plans and specifications for award of construction contracts.

AL. 7. See General Responses #1. and #2.

is exempted from the ACEC regulations due to the project's "broad public benefit" and the belief that the existing process for review of federal projects meets the intent of the ACEC program. The fact is that the area is designated an area of critical environmental concern, and as there are increasingly fewer natural wetland and tidal estuarine areas the option adopted should have as little impact upon this area as is possible. 1

Next: the gates are estimated to be closed 2-3 times per year based on current flood frequency levels. Yet, it is stated that due to the greenhouse effect and the subsequent expected rise in sea-level in the future the frequency of closure may increase. This may have a detrimental effect on the flushing function of the water flow through the estuary, not to mention adverse effects to the estuarine environment in general. Consequently, any proposed plan must take this prediction into account and include projected figures along with the proposal. It is likely that if this analysis were done the environmental impacts would certainly skyrocket past current projections making Option 3 inconcievable. 2

The Army Corps of Engineers mentions that along with the construction of the floodgates there is a plan to upgrade the condition of the dykes, walls and stone revetments along the area shoreline to physically hold back the tide. Yet the report states that there have been "significant erosion problems" especially where the protective seawall structures have been erected. Why then should money be spent to repair structures that are becoming increasingly obsolete? Restoration of eroded shoreline and beach does not happen with the construction of sea walls. It begins with beach renourishment and other so-called "soft solutions" and the removal of all immobile structures. Research has shown that "hard solutions" such as dykes and seawalls serve at best to speed up the problem of beach erosion and that the only way to solve the problem of flooding and loss of land to the ocean is not to build on the coast. This brings up the issue of future development in the area under review. 3

Obviously, there is concern for the area of the floodplain that has been developed. A floodplain exists in great part as nature's overflow tank. Disrupting the natural process of the floodplain is merely knocking the first domino of the stack. The report states that new residential developments are expected to increase future populations in the project area. There should be a move to discourage building in these sensitive areas to avoid similar and possibly greater problems in the future. 4

The floodgate option calls for the loss of 10 acres of "mostly" intertidal habitat. The report should more clearly state what else is included. Then, it is proposed that the intertidal habitat be replaced elsewhere with 10 acres of clam flats. Great idea... too bad the harbor and surrounding areas are the most polluted in the country. Health risks? red tide? What's the point? The intertidal habitat area should not be destroyed at all. 5

Construction is set to commence in 1994. If the flooding problem is really such a serious matter, why is it taking so long to set the plans in motion. Wouldn't it make more sense to 6

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implement a non-structural plan that could be used now instead of risking human safety and property damage during the next five years waiting for a project option that may be obsolete from the start. 6

The only acceptable and feasible solution in the eyes of the Sierra Club at this time is the implementation of Option 2, the non-structural plan: boosting non-structural flood reduction measures, ending support of shoreline development, increasing public access to insurance through the National Flood Insurance Program (NFIP), and preserving the wetland/estuarine environment. 7

AL 5

NEW ENGLAND FISHERY MANAGEMENT COUNCIL
5 BROADWAY • SAUGUS, MASSACHUSETTS 01906
SAUGUS 617-231-0422 FTS 8-835-8457

September 25, 1989

Colonel Stanley J. Murphy
District Engineer
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254

Dear Colonel Murphy:

We understand that the Army Corps of Engineers has completed the Saugus River and Tributaries Flood Reduction Study that proposes development of large scale coastal flood control in the towns of Lynn, Revere and Saugus. As described, the project will include a tide gate that would span the mouth of the Saugus River and will provide other shore front protection features.

The New England Fishery Management Council (NEFMC) is concerned about the potential impact of the project on marine fish resources that utilize important estuarine and intertidal habitat within the estaury of the Saugus and Pines River and Lynn Harbor. Pursuant to the Magnuson Fishery Conservation and Management Act, section 1852 (i), 16 USC section 1801 et seq, the NEFMC may make recommendations concerning any activity undertaken or proposed to be undertaken by any State or Federal agency that, in the view of the Council, may affect the habitat of a fishery under its jurisdiction.

As you are aware, the Saugus River and its environs provide important habitat for numerous marine, anadromous and catadromous fishes. The Saugus and Pines River estuary and the flats in Lynn Harbor serve as important spawning, nursery and feeding habitat to commercially and recreationally important fisheries, including winter and yellowtail flounder, Atlantic cod, Atlantic herring, Atlantic mackerel and bluefish. Other important species likely to use the estuary during various stages of their life history include: Atlantic menhaden, butterfish, haddock, pollack, rainbow smelt, hake, American plaice, windowpane, American eel, striped bass and tautog.

Because of the fundamental importance of estuaries to the life cycles of marine fishes, it is imperative that the proposed project have no adverse impact to any fish life stages or habitat. The following questions are posed with the intent of determining whether the project prevents impacts to fishery resources. The tide gate and associated shorefront protection structures would undoubtedly cover intertidal and subtidal habitat.

ALA,

CORPS RESPONSE

AL. A1. The total habitat destroyed by the proposed plan is 3.0 acres. Two acres of intertidal habitat and one of subtidal habitat. These areas have both economic and ecological value. The EIS/EIR documents the commercial value of the lost shellfish densities (approximately 50 clams per square meter) and ecological quality of the area as productive habitat. These values warranted mitigation to lessen project impacts. The proposed compensation mitigation has become a project feature to lessen the loss of these significant resources.

AL. A2. Yes, the selected plan is the least environmentally damaging alternative that provides the maximum flood protection benefits.

AL. A3. As discussed in General Response #2, the non-structural plan does not provide adequate protection to be selected as the preferred alternative.

AL. A4. Yes, the mitigation proposed affords a 1 to 1 ratio of habitat compensation. This will be constructed through removal of disturbed upland fill (the I-95 Embankment) to provide 2 intertidal acres of clam flats and one subtidal acre of habitat.

AL. A5. The Mya arenaria populations will be reestablished in the mitigation areas by an active transplant program.

AL. A6. The flushing gates were designed to provide openings below mean sea level for tidal flows that are larger by 500 square feet than the existing natural constriction in the vicinity of the General Edwards Bridge.

AL. A7. The 100 foot wide navigation gate allows passage at all tide levels. The tainter gates were designed flush with the substrate to assure demersal fish passage. The tainter gates will impede free passage on the immediate water column surface after tides reach mean sea level. As tides flood, the upper 2 to 5 feet (neap to spring tidal heights) of the water column through the tainter gates will be obstructed.

AL. A8. The structure closings will be of short duration (2-3 hours at the high end of the tides) initially two to three times per year eventually up to 40 times per year, based on historic sea level rise rates. This should not preclude fisheries migrations, but only temporarily impede it.

AL. A9. The gates will be engineered to have rounded corners to reduce impingement of larvae and juveniles.

AL. A10. Letters of coordination and review from these agencies recognize both the project benefits and impacts (see letters HB - National Marine Fisheries Service; P - Mass. Division of Fisheries and Wildlife; and Q - Mass. Division of Marine Fisheries). The concerns expressed in their letters have been responded to in this report's Appendix and as discussed in General Response #1 through 4, the project has been altered in some cases to accommodate their recommendations.

- How much habitat would actually be destroyed by the project and what is its significance? | 1

- Does the Corps of Engineers plan represent the least environmentally damaging alternative? | 2

- Are other alternatives available that would affect less habitat, and if so, have they been considered? | 3

- Has the Corps proposed to compensate for unavoidable habitat losses? | 4

- If so, how would the proposed mitigation benefit commercial fish species that utilize habitat eliminated by the project? | 5

The Council is also concerned with the effect of the proposed tide gate on fish migration, since the estuary serves as critical nursery habitat for many commercially valuable species. Of particular concern is the need to provide clear passage for fish eggs and larvae that are carried by tidal currents into the estuary from nearshore spawning areas.

- Within this context, would the tide gate constrict tidal exchange or flows into the estuary at any tide levels? | 6

- Would any portion of the river cross-section or water column be obstructed by the tide gate? | 7

- What affect will closing the tide gate have on fish migration? | 8

- What measures would be incorporated into the project design to ensure that fish eggs, larvae, juveniles and adults will not be impacted as they pass through the tide gate? | 9

- Has the design been approved by state and federal fishery management agencies? | 10

The Council is concerned with the potential for the project to adversely impact water quality within the estuary, under both present and future conditions.

- What will be the effect of impounding chemical and thermal pollutants discharged into the estuary while the tide gate is closed? | 11

- Would toxic materials impounded behind the closed tide gate settle out on the tide flats within the estuary or otherwise affect fish or their invertebrate food base? | 12

- Will the effect of the project on the estuary change in the future if sea levels continue to rise as scientists predict? | 13

CORPS RESPONSE

AL. A11. The tidegate will only be closed during short periods at the high end of the tidal cycle. The effect on water quality will be immeasurable. This concern was investigated in detail for the Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR), as discussed in Sections 6C and 7C.

AL. A12. The tide gate closures may temporarily impound waters with their inherent contaminant load, but this immeasurable impact will be reversed as flushing is restored after the short time of gate closure.

AL. A13. The effects of sea level rise might be to alter the project or its operational procedures. The possible alternatives investigated are detailed in General Response # 4, in the FEIS/FEIR Chapter 8 and in the main report.

AL. A14. The project induced alterations to the water chemistry are anticipated to be negligeable and therefore not requiring any mitigation.

AL. A15. The project operational scenarios for future accelerated sea level rise are detailed in the Main Report and General Response # 4.

• How would project-induced impacts to the water chemistry affect commercially important fish species that are dependent on the estuary, and what measures are proposed to mitigate those impacts? 14

• What measures are proposed to offset future impacts to the estuary that might occur under project operation with higher sea levels? 15

We hope that the Corps of Engineers' environmental impact studies will answer our questions regarding impacts to fishery resources. We would also appreciate receiving a copy of the environmental impact statement for review and comment.

Section 1852 (i) of the Magnuson Act further requires that within 45 days after receiving comments or recommendations from a fishery management Council, a Federal agency must provide a detailed written response to the Council. We wish to exercise our perogative in this regard and look forward both to your response and to further cooperation with the Corps on the the Saugus Marsh project. Thank you.

Sincerely,

Doug Marshall

Douglas G. Marshall
Executive Director

ALA3

CORPS RESPONSE

AM. 1. The floodgate is located east of the Point of Pines Yacht Club.

AM. 2. The floodgate structure would also protect and not interfere with the pump station.

AM. 3. During severe northeast storms, such as the Blizzard of 1978, the waters of Massachusetts and Cape Cod Bays between Nahant and Sandwich respond similarly to the strong northeasterly winds as evidenced by the average of high water marks gathered throughout the area. (See plates C-24 through C-26). If the tidal floodgate were to be closed for a storm tide of about 10 feet NGVD, approximately 4200 acre feet of water would be prevented from entering the Saugus and Pines Rivers tidal area. Assuming this water were to be spread out over Massachusetts and Cape Cod Bays area of about 1300 square miles, the stillwater would rise about 0.06 inches. To be sure, this is a great simplification of a complex hydrodynamic process. However, it illustrates that the floodwater was prevented from entering the estuary is small in comparison to surrounding bay waters and will not result in any significant increased flooding along the ocean side of Point of Pines or adjacent areas.

AM. 4. With the estimated yearly average of 2 to 3 gate closures the effects of the floodgate project on the estuary will be negligible. (see response to comment J8 and AA1) The gates in the floodgate structure are being designed to have minimal effect on both tidal flushing and currents of the Saugus River during the open gated condition which will exist nearly always except during coastal storms expected to cause tidal flooding. We do not expect any change in the currents moving north along Revere Beach. During design studies a 2 dimensional mathematical model and a physical model will be constructed to optimize the floodgate design and assure no adverse current or flushing changes.

AM. 5. Property owners will be compensated for any land takings at fair market value.

AN. 1.& 2. No response required.

AN. 3. Significant flood damage reduction benefits accrue to Point of Pines.

AN. 4. Coordination will be maintained for Point of Pines activities.

AN. 5. Crossovers of Point of Pines shorefront will be provided to the beach.

AN. 6. See Response J.1.

AO. 1. Construction of a wall along the back property line would be coordinated with the property owner to minimize disruption from plan activities and avoid blocking the access road for an extended period of time.

8/10/84

Col. Wilson,

I was not able to attend the recent hearing concerning the proposed Pines/Saugus River dike However, I do have a few comments and questions.

Recommendations:

1 ① Either place the Point of Pines terminus of the dike East of the Point of Pines Yacht Club or build a levy around the club — because during the Blizzard of Feb. 1978, a major source of flooding to the Pines was a result of water entering the area through the Yacht Club land.

2 ② The outlet to the Pines Pumping Station (Bakman Ave & the P.P. Yacht Club) be extended into the river channel to facilitate its flow through the floodgates of the dike.

Questions:

3 ① By preventing a storm surge up the river with building of the dike, will this cause an increase in the force of a storm that will have detrimental affects to the oceanside of the Pines?

4 ② will the building of the dike affect; the present estuary (ie, salinity, etc); present currents of the river; present currents moving North on Revere Beach?

5 ③ the building of the dike requires land taking; what in terms of compensation will the land owners receive?

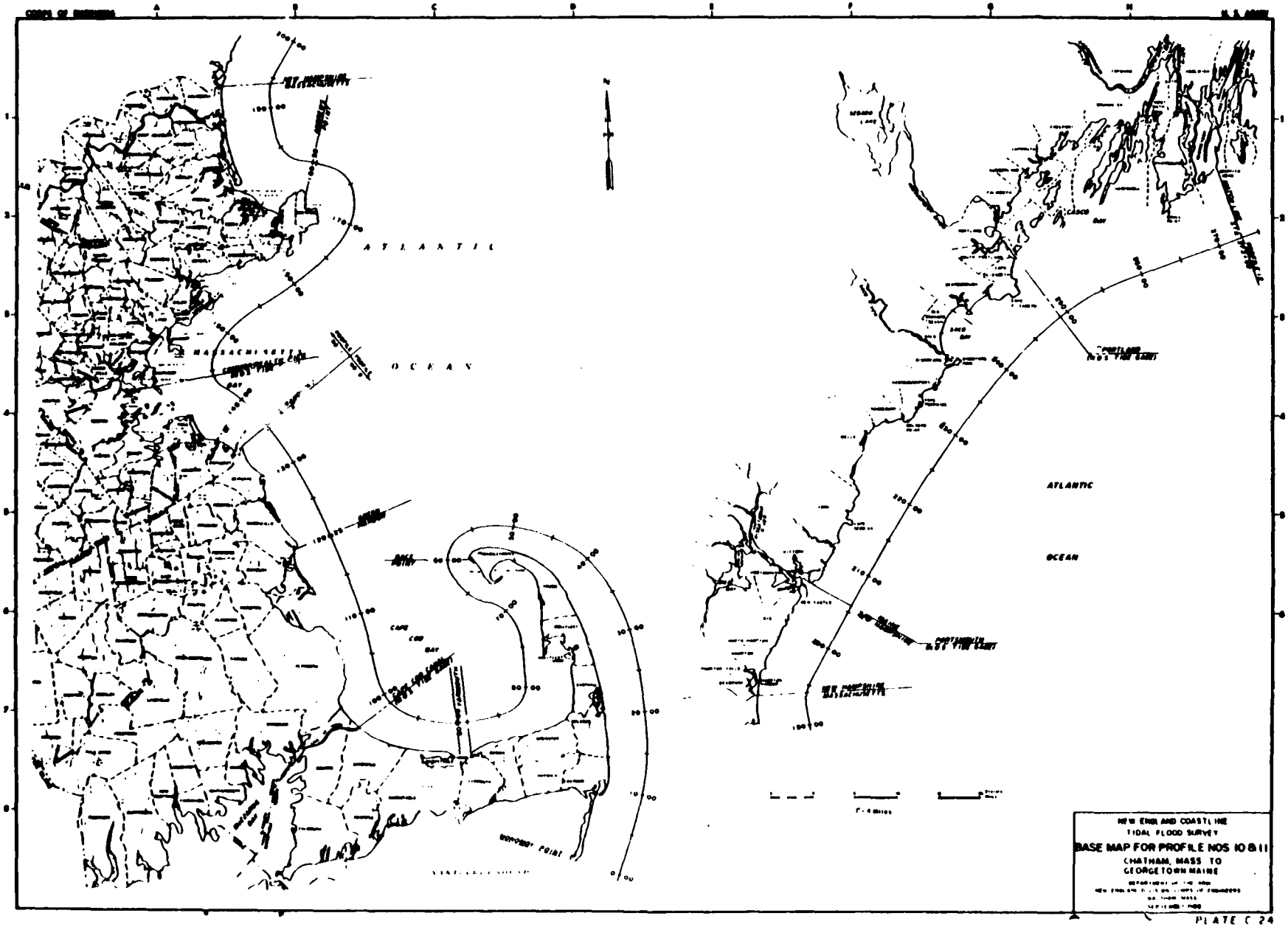
Thank you for your time and I anxiously await your reply.

Sincerely

Michael F. Furlong

AM

45 Lancaster Ave.
Revere, Ma. 02151-1736
Tel #(617) 284-8870


ATLANTIC
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ATLANTIC
OCEAN
NEW ENGLAND COASTLINE
TIDAL FLOOD SURVEY
BASE MAP FOR PROFILE NOS 10 & 11
CHATHAM, MASS TO
GEORGETOWN MAINE

PLATE C 24

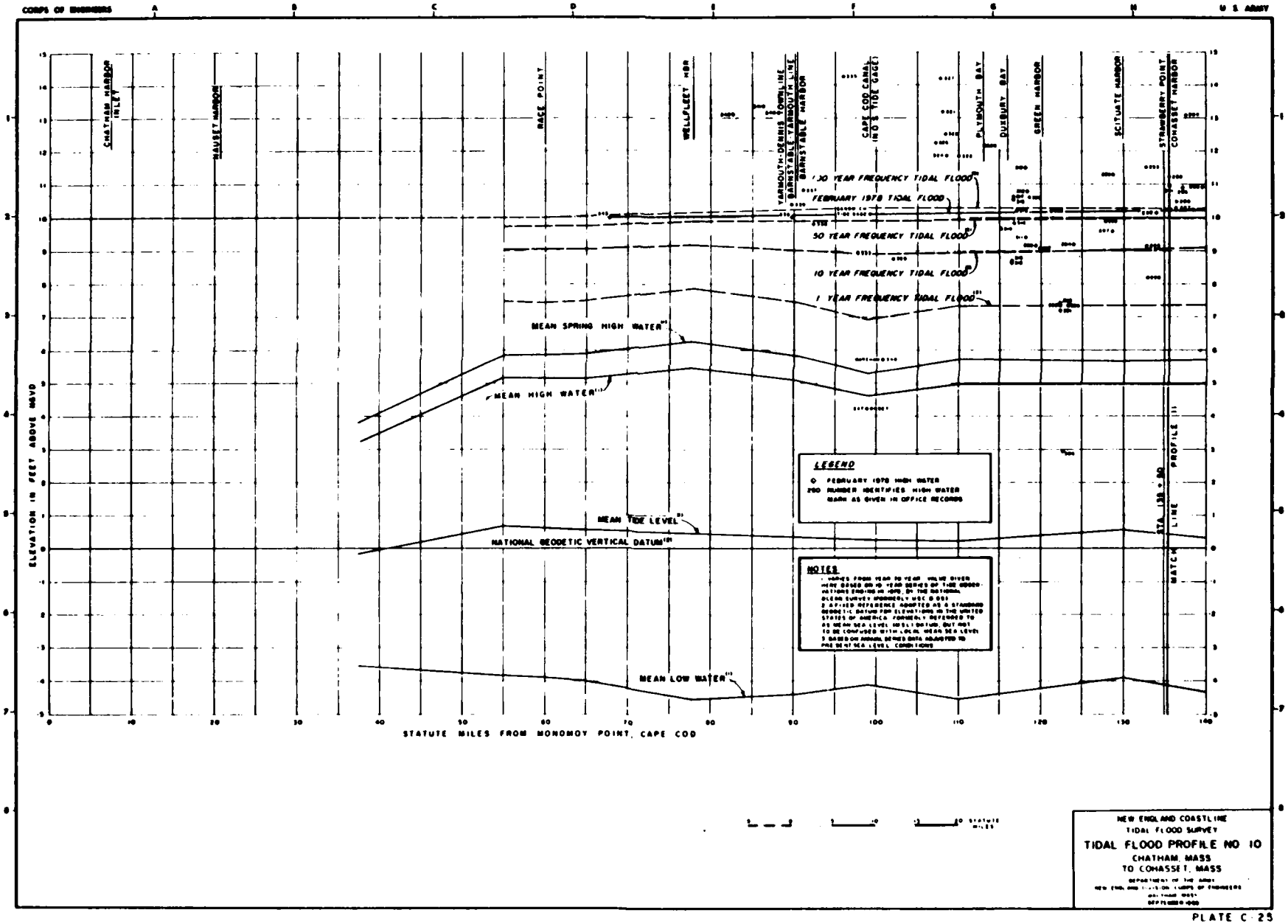
CORPS OF ENGINEERS
U.S. ARMY
CHATHAM HARBOR INLET
HAVILET HARBOR
RACE POINT
WELLFLEET HBR
YARMOUTH-DENNIS TOWN LINE
BARNSTABLE-YARMOUTH LINE
BARNSTABLE HARBOR
CAPE COD CANAL (U.S. TIDE GAGE)
PLYMOUTH BAY
DUXBURY BAY
GREEN HARBOR
SCITUATE HARBOR
STRAWBERRY POINT
CONOHASSET HARBOR
100 YEAR FREQUENCY TIDAL FLOOD
FEBRUARY 1978 TIDAL FLOOD
50 YEAR FREQUENCY TIDAL FLOOD
10 YEAR FREQUENCY TIDAL FLOOD
1 YEAR FREQUENCY TIDAL FLOOD
MEAN SPRING HIGH WATER
MEAN HIGH WATER
MEAN TIDE LEVEL
NATIONAL GEODETIC VERTICAL DATUM
MEAN LOW WATER
ELEVATION IN FEET ABOVE NGVD
STATUTE MILES FROM MONOMOY POINT, CAPE COD
STA. 138 + 00 PROFILE LINE MATCH
LEGEND
NOTES
NEW ENGLAND COASTLINE
TIDAL FLOOD SURVEY
TIDAL FLOOD PROFILE NO 10
CHATHAM, MASS
TO COHASSET, MASS

PLATE C-25

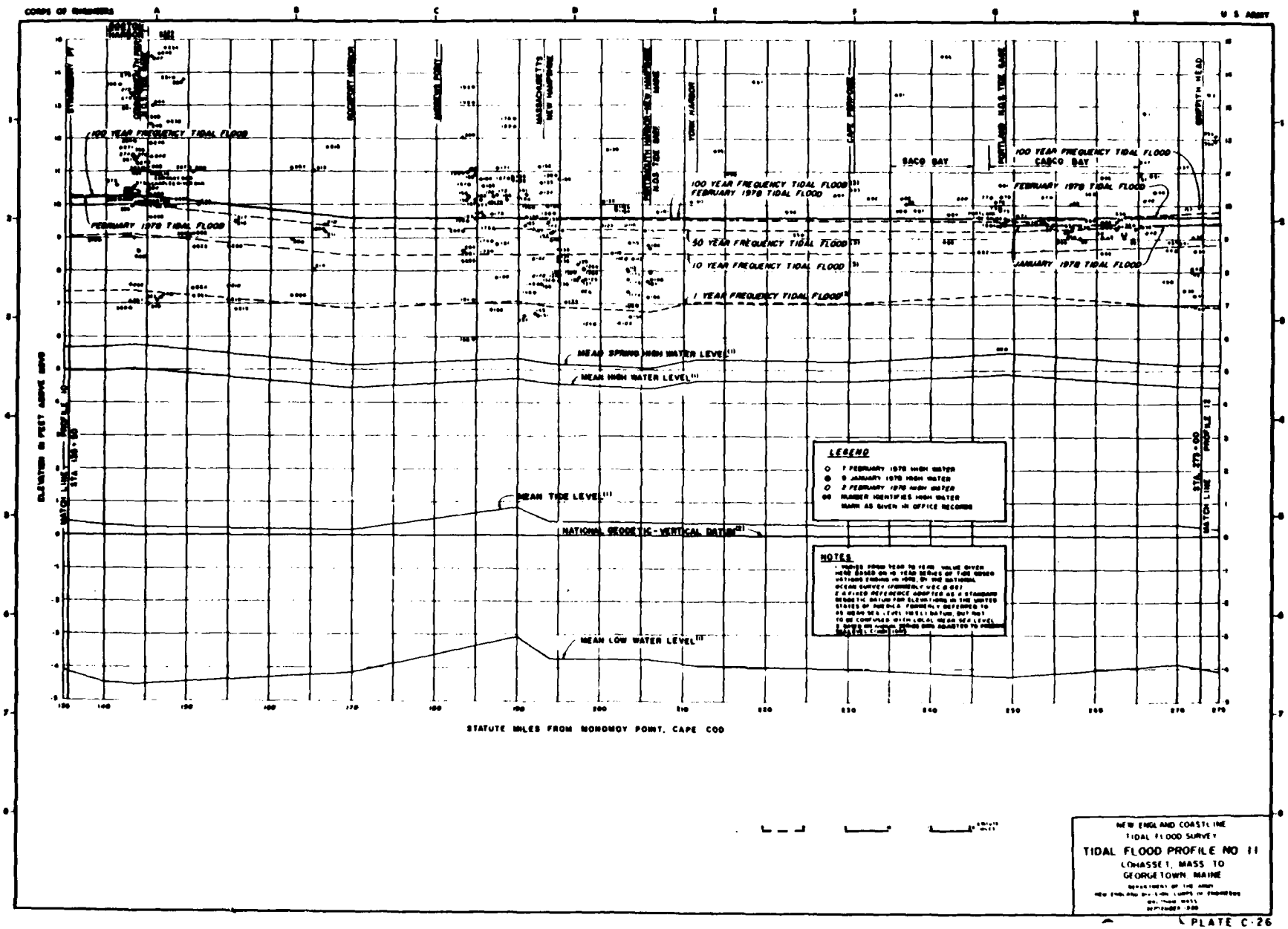
100 YEAR FREQUENCY TIDAL FLOOD
FEBRUARY 1978 TIDAL FLOOD
50 YEAR FREQUENCY TIDAL FLOOD
10 YEAR FREQUENCY TIDAL FLOOD
1 YEAR FREQUENCY TIDAL FLOOD
MEAN SPRING HIGH WATER LEVEL
MEAN HIGH WATER LEVEL
MEAN TIDE LEVEL
NATIONAL GEODETIC VERTICAL DATUM
MEAN LOW WATER LEVEL
SACO BAY
CASCO BAY
JANUARY 1978 TIDAL FLOOD
LEGEND
NOTES
STATUTE MILES FROM MONOMOY POINT, CAPE COD
ELEVATION IN FEET ABOVE MSL
NEW ENGLAND COASTLINE
TIDAL FLOOD SURVEY
TIDAL FLOOD PROFILE NO 11
COHASSET, MASS TO
GEORGETOWN, MAINE

PLATE C-26

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

August 3, 1989

REPLY TO ATTENTION OF
Planning Division
Basin Management Branch

REMINDER

Dear Citizen Steering Committee Member or Study Participant:

Thank you for your participation and comments at the July 20th meeting. Please provide your comments on the Saugus River Flood Damage Reduction Report as soon as possible indicating your support and/or comments on the Regional Floodgate Plan. The comment period ends August 7; however, if received by August 12th, they can be included in the MEPA process.

Addresses where your comments should or may be sent are attached.

Sincerely,

Robert G. Hunt
Project Manager

Encl

JOSEPH FELZANI
42 GOODWIN AVE.
REVERE, MA 02151
POINT OF PINES
(mailed Aug. 7, 89)

Comments:

(1) I'm in favor of the flood project

(2) I'm in favor of the National Flood Insurance Program be eliminated if this project sets the flood proof for the Point of Pines area.

(3) Consideration should be given to the tax payers also of the Point of Pines area for the ability of the surrounding areas to be flood free, while using Point of Pines area for the flood fla

(4) Condition of the private beach and dunes on Point of Pines section while and after construction.

(5) Easy access to the water for the resident of Point of Pines.

(6) Maintenance of the facility by the Corps of Engineers so that tone uphills and sunrollables is maintained AN

PHILIPS

Philips Lighting

July 7, 1989

Colonel Daniel M. Wilson, Division Engineer
U.S. Army Engineer Division, New England
424 Trapelo Road
Waltham, Massachusetts 02254-9149

Dear Sir:

We have reviewed the draft report entitled "Water Resources Investigation-Feasibility Report" etc., and have one major concern involving the Philips Lighting Company, 330 Lynnway, Lynn Massachusetts.

The access road on our property to our raw material unloading docks, runs along the most easterly portion of our facility abutting the proposed dike. As I understand your proposal, it will be necessary for heavy construction equipment to block this road for extended periods of time during the construction phase.

Any blockage of this passageway, for a longer period than one hour, can seriously impact the delivery of raw material to our manufacturing process. At that point in time, it would be necessary to lay off approximately 700 people, because of lack of working material.

We would like to have a written clarification as to the status of this roadway during the construction phase.

Very truly yours,

Stephen A. Swidler
Manager
Facilities & Environmental
Engineering

SAS/pc

cc: Mr. David Shepardson
EOEA/MEPA Unit

Philips Lighting Company
A Division of North American Philips Corporation
330 Lynnway
Lynn, MA 01901

JUL 13 1989

AO

CUDDY, LYNCH, MANZI & BIXBY
ATTORNEYS AT LAW
ONE FINANCIAL CENTER
BOSTON, MASSACHUSETTS 02111
617-348-3600
FACSIMILE 617-348-3643

Suburban Office
31 WASHINGTON STREET
WELLESLEY, MASSACHUSETTS 02181

July 28, 1989

Mr. Robert G. Hunt
New England Division
U.S. Army Corps of Engineers
424 Trapelo Road
Waltham, MA

Re: Saugus Damage Reduction DEIS/DEIR
EOEA # 6497

Dear Mr. Hunt:

The following comments are submitted on behalf of the Eliot Bank, which as first mortgagee, retains an interest in the South Harbor Realty Trust's project in Lynn, MA. While we support the concept of flood protection, there are certain aspects of the Flood Damage Reduction project which materially affect the South Harbor property. The proposed construction of floodgates at the mouth of the Saugus River and dikes and seawalls along the South Harbor waterfront may have direct and significant adverse impacts upon the subject property. Construction of the project presents a severe detriment to the reuse of the property for both water dependent and non water dependent uses.

The South Harbor property extends from the mouth of the Saugus River in the south to the Gloucester Corporation facility in the north and is bounded by various business and retail uses paralleling Route 1A on the west and Lynn Harbor on the east. The property includes approximately 3,000 linear feet of frontage along Lynn Harbor and 43 acres of upland.

The proposed project would result in the construction of an earth filled, stone faced dike along the entire easterly shoreline of the property. The first 1,800 feet of the dike will increase the elevation of the existing shoreline from elevation 10 NGVD to

AP

CORPS RESPONSE

AP. 1. The design and construction of Floodgates and dikes along Lynn Harbor would be closely coordinated with the developers plans, and may reduce his cost in developing shore protection. Coordination with developers plans have been ongoing and will continue in order to reduce any impact on development plans.

AP. 2. The height of protection was understood by the Corps of Engineers to be similar to that needed by the developer. His plans will be closely coordinated to assure no adverse impacts.

AP. 3. The latest set of plans reviewed from the developer did not include a marina or dredging along Lynn Harbor.

AP. 4. The referenced map represents a reasonable attempt to qualitatively evaluate the sedimentation effects of the floodgate. Some shoaling to the south and east at the corner of the Lynn Bulkhead would be expected since currents will move somewhat further toward the river center in order to pass through the floodgate openings. Reduced currents will result in increased shoaling. However, with the present low rates of shoaling any increase is expected to be small. Current modelling during design will allow for the deduction of more refined judgements regarding sedimentation effects of the proposed floodgate. These effects will be considered during final design.

AP. 5. Compensation costs have been considered for all potential land takings.

AP. 6. In the case of the vacant land along Lynn Harbor, the value would reflect its development potential.

AP. 7. The land along Lynn Harbor would remain the property of the original land owner. Permanent easements at the location of the structures would be required.

AP. 8. There are no existing or known plans for moorings along the vacant South Harbor property at the dike location.

AP. 9. The one acre parcel is the right of way of the MDC to the public fishing pier.

AP. 10. There are no restrictions the project would place on waterfront property owners west of the project. In design, modelling will define the currents near the structure. It is not anticipated that the floodgate structure would deter construction of a marina.

AP. 11. An offshore breakwater would cost over twice as much as the proposed structures and the shorefront would still need to be protected. A breakwater would likely have significant environmental impacts.

AP. 12. The construction of dikes along the South Harbor bulkhead is similar to developers plans. A steel wall would cost about $4 million more to construct and would require about the same height as the dikes.

elevation 17 feet NGVD and the remaining 1,200 feet will increase from elevation 10 NGVD to elevation 15 NGVD resulting in separating the property both physically and visually from the waterfront. Construction of this seven foot high "wall" will eliminate existing pedestrian views from the site to the harbor and create negative views from the water toward the shore. 2

In addition, this area is presently stabilized with a vertical timber wall. Construction of the dike will require a 2:1 slope with a width of 12 feet at the top of the dike and a width at the base of approximately 65 feet. By eliminating the existing vertical wall and replacing it with the filled dike structure, approximately 3,000 lineal feet of potential marine use area is eliminated from the waterside of the property due to the inability to effectively cross over the dike. 3

The report also includes a map in Appendix K - Environmental, which shows areas which may be subject to increased shoaling. The map shows shoaling along the south and eastern portion of the property which would further impede the future use of this area as a marina. 4

Additionally, because the tidelands in this area are privately owned, construction of the dike will require compensation for permanent easements or land acquisition. This cost should be considered in the EIR. 5

A final concern involves some of the assumptions found in Appendix F - Real Estate. On page F-7 there is an assumption that once a permanent easement interest is imposed that the highest and best use of the remainder of the properties will not be materially affected. We believe to the contrary that the proposed seawall would adversely affect the value of the remaining property. Of greater concern is the assumption found on page F-11 regarding Highest and Best Use which reads "The highest and best use of the affected properties is considered, in most cases, to be their present use." In the case of the subject property, its present status is vacant and for obvious reasons we do not agree this is its highest and best use. We believe that these assumptions do not appear to be realistic and that they should be re-examined. 6

In addition to these comments, we have several questions we feel need to be addressed as follows:

1. After the dikes are constructed, who will own the tidelands in this area and what will the access right of abutters be? 7

AP2

2. What is the impact of the dike construction on existing and potential recreational mooring/boating in the areas seaward of the dikes? 8

3. The report also lists a "one acre vacant parcel" which would be obtained in this area to provide access, parking and support of the floodgates. This parcel should be clearly identified as to location and ownership. 9

4. Will any use restrictions be imposed on waterfront property owners for the water area located west of the floodgate structure in the Saugus River. Can this area be used in the future for the construction of a marina? 10

Finally, we recommend that additional alternatives be evaluated including the construction of a solid fill breakwater in Lynn Harbor to deflect the wave action off shore, thereby providing added protection for Lynn Harbor and, at the same time reducing the required height of flood control structures. This option was recently considered as part of the Central Artery/Third Harbor Tunnel EIS. 11

We are concerned about the construction of 3,000 linear feet of earthen dike along the property and believe that the construction of a steel sheet pile vertical wall with a reduced height would be preferable to retain the value of the property as a prime waterfront parcel rather than have the site transformed into a walled, isolated parcel without any visual or physical access to its greatest asset, the water. 12

Very truly yours,

William F. M. Hicks

WFMH:kar

cc: R. Weissman, J. Harvie & Partners
Jamie Fay, President, Fort Point Associates
Mayor Albert V. DiVirgilio
Congressman Nicholas Mavroules
Susan Hana, Eliot Bank
Thomas A. Hickey, III, Esq.

2035.3

AP 5